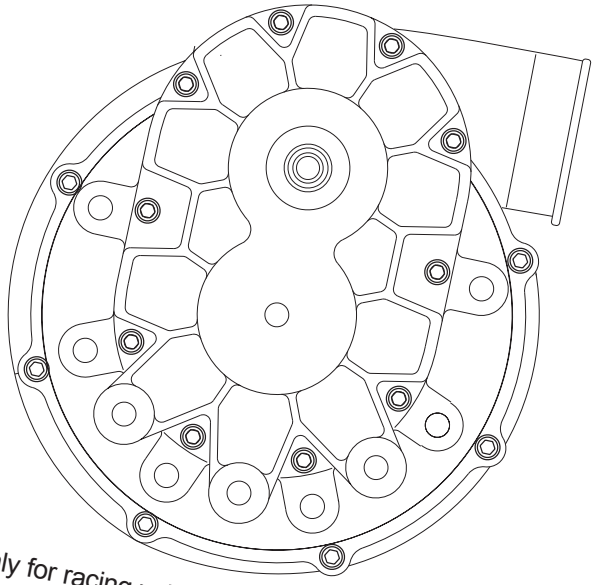
# CHEVROLET CORVETTE

## Supercharger System Installation Instructions

**1997-2003 Model Years**
**50 State Smog Legal per CARB EO #D-213-19**
**2004 Model Year***



*Legal in California only for racing vehicles which may never be used upon a highway.

VORTECH®

***ENGINEERING, LLC***

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*4GR020-010 v1.7 — 11/25/09*

# FOREWORD

Proper installation of this supercharger kit requires general automotive mechanic knowledge and experience. Please browse through each step of this instruction manual prior to beginning the installation to determine if you should refer the job to a professional installer/technician. Please call Vortech Engineering for installers in your area.

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# GM Chevrolet Corvette
# IMPORTANT NOTES

This kit requires ECM programming. The hand-held ECM programmer is not included in the kit box and must be ordered directly from Vortech by the installing customer (the charge for this unit has been included in the purchase price).

Included in this kit is a credit tag for one hand-held programmer. The programmers are made specifically for each individual vehicle with respect to the factory ECM calibration and VIN. Simply follow the instructions on the hand-held programmer credit tag.

Your ECM hand-held programmer comes with a twelve month limited warranty from the original date of purchase of your supercharger system (see the Owner's Manual for details).

Vortech Engineering is not responsible for engine or ECM damage due to an improperly installed/mishandled ECM module or ECM.

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This product may not be copied or duplicated in whole or part, abstractly or fundamentally, intentionally or fortuitously, nor shall any design, dimension, or other information be incorporated into any product or apparatus without prior written consent of Vortech Engineering, LLC.

The Corvette fuel delivery system is marginal for high horsepower applications. It is important to install a fuel pressure gauge on the vehicle and verify that the fuel pressure stays above 50 psi (especially at redline). Engine damage can result if the fuel pressure drops below this level and allows the air-fuel ratio to go lean. Fuel pump and or voltage booster components are not included in this system.

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# CHEVROLET CORVETTE
## Installation Instructions

# 1997-2004

***Congratulations on selecting the best performing and best supported automotive supercharger available today... the VORTECH® Supercharger!***

**Before beginning this installation, please read through this entire instruction booklet and the Street Supercharger System Owner's Manual and Automotive Limited Warranties Program.**
Vortech supercharger systems are performance improving devices. In most cases, increases in torque of 20% to 35% and horsepower of 35% to 50% can be expected with the boost levels specified by Vortech Engineering, LLC. This product is intended for use on healthy, well maintained engines. Installation on a worn-out or damaged engine is not recommended and may result in failure of the engine as well as the supercharger. Vortech Engineering, LLC is not responsible for engine damage.
Installation on new vehicles will not harm or adversely affect the break-in period so long as factory break-in procedures are followed.

**For best performance and continued durability, please take note of the following key points:**

1. Use only premium grade fuel 91 octane or higher (R+M/2).
2. The engine must have stock compression ratio.
3. If the engine has been modified in any way, check with Vortech prior to using this product.
4. Always listen for any sign of detonation (pinging) and discontinue hard use (no boost) until problem is resolved.
5. Perform an oil and filter change upon completion of this installation and prior to test driving your vehicle. Thereafter, always use a high quality synthetic lubricant, and change the oil and filter at least every 3,000 miles. Never attempt to extend the oil change interval beyond 3,000 miles, regardless of oil manufacturer's claims, as potential damage to the supercharger may result.
6. Before beginning installation, replace all spark plugs that are older than 1 year or 20,000 miles with original heat range plugs as specified by the manufacturer (follow the procedures outlined in the factory repair manual and/or as indicated on the factory underhood emissions tag). Do not use platinum spark plugs unless they are original equipment. Change spark plugs every 40,000 miles and spark plug wires at least every 60,000 miles.

**TOOL & SUPPLY REQUIREMENTS**

- Factory repair manual
- 3/8" socket and drive set: SAE & metric
- Flat #2 screwdriver
- Phillips #2 screwdriver
- Adjustable wrench
- Combination wrenches: SAE and metric
- 16mm thin combination wrench
- 1/8", 1/4", 5/16", 11/16" drill bits
- 1/4", 3/16" allen wrenches
- 1 gallon factory specified engine coolant
- 1.25" hole saw
- 1 quart factory specified power steering fluid
- Power steering pulley puller and installer
- Thread sealer
- Hose cutter or knife
- Blue threadlocker
- Spark plug socket
- 8 - new OE heat range spark plugs
- 6 quarts factory specified motor oil/oil filter
- Spring-lock fitting disconnect tool
- 3/8" drill motor
- Wire cutter/crimp tool
- Torque wrench
- 3/8 NPT taps
- Stepless clamp pliers
- Flare nut, 13mm crows foot 3/8" drive
- Fuel pressure gauge

**GM TOOLS**

- J 42386 flywheel holding tool
- J 36660 torque angle meter
- Factory service manual



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***IMPORTANT:*** *Before beginning installation, verify that all parts are included in the kit. Report any shortages or damaged parts immediately.*

| PART NO. | DESCRIPTION | QTY. |
|---|---|---|
| **2E229-020** | **V2SQ ASSY, C5 SATIN** | **1** |
| 4GR033-034 | S/C PULLEY, 34-TOOTH, C5 | 1 |
| 2A042-080 | BELT, GATES 640-8MGT-20 | 1 |
| **4GR111-021** | **MTG BRKT ASSEMBLY** | **1** |
| 4GR011-021 | MTG BRKT,S/C,C5 MACH | 1 |
| 7C010-025 | M10-1.5" x 25mm HXCSP | 3 |
| 7C010-035 | M10-1.5" x 35 HXCSG8P | 1 |
| 7J010-002 | 10mm WASHER, ZINC PLATED | 4 |
| 7A375-175 | 3/8-16 x 1-3/4" HXHD GR5 PLT | 1 |
| 7A375-200 | 3/8-16 x 2" HXHD GR5 PLTD | 2 |
| 7A375-300 | 3/8-16 x 3" HXCS G5P | 1 |
| 7A375-324 | 3/8-16 x 3-1/4" HXHD GR5 PLD | 1 |
| 7F375-017 | 3/8-16 NYLOCK NUT | 1 |
| 7J375-044 | 3/8"SAE WASHER, PLTD | 7 |
| 4GR116-300 | IDLER ASSY, 20mm BELT | 1 |
| 4FA016-171 | DUST COVER (IDLER PULLEY) | 1 |
| 4FH016-150 | IDLER PULLEY, 6-RIB 3" FLANGD | 1 |
| 2A017-462 | SPACER,IDLER SMOOTH 6-RIB | 1 |
| 2D070-171 | JACKSHAFT, C5, H900 | 1 |
| 4GR032-030 | PULLEY, 30-TOOTH JKSHFT, DRIVEN | 1 |
| 7U100-069 | KEY, 3/16" SQUARE x .73" LONG | 2 |
| 2A040-021 | RETAINER, PULLEY, FLATHD | 2 |
| 7B375-076 | 3/8-24 x 3/4" GR8 FLATHEAD | 2 |
| 2A046-104 | BELT K061045-GATES '94 5.0 | 1 |
| 4GR036-360 | PULLEY, JACKSHAFT, 6-RIB 3.60" | 1 |
| 7J012-002 | 12mm WASHER, FLAT | 9 |
| **4GR110-010** | **ASSY, ALT MOUNTING** | **1** |
| 4GR010-010 | PLATE, ALT PRIMARY | 1 |
| 2A017-102-713 | SPACER, ALT PLATE, 10mm | 3 |
| 7C010-045 | 10mm x 1.5" x 45mm HEX HEAD | 3 |
| 4GR010-020 | PLATE, ALT, SEC | 1 |
| 2A017-102-205 | SPACER,SEC,ALT PLATE,C5 | 2 |
| 7C100-110 | M10 x 1.5" x 110 HXHD GR8.8 | 1 |
| 7C010-065 | M10 x 1.5" x 65 BOLT, HEX HD | 2 |
| 7J010-002 | 10mm WASHER, ZINC PLATED | 6 |
| 2A017-462 | SPACER,IDLER SMOOTH 6-RIB | 1 |
| 4GR016-150 | IDLER PLY, 3.5" SMOOTH | 1 |
| 4FA016-171 | DUST COVER (IDLER PULLEY) | 1 |
| 7C010-025 | M10-1.5" x 25mm HXCSP | 1 |
| 2A017-102-128 | SPACER,SPRING TNSNR,C5 | 2 |
| 7C100-085 | 10mm x 1.5" x 85mm, HEX HD BLT,G5 | 1 |
| 5W008-100 | 8GA, RED STRANDED WIRE | 2' |
| 5W001-055 | SPLICE, 8AWG,CRIMP ON | 1 |
| 5W001-035 | LUG, COPPR, 6-2AWG, 3/8" STUD | 1 |
| 5W018-010 | 18GA STRD WIRE RED | 2' |
| 5W022-030 | 22GA STRD WIRE, RED | 2' |
| 5W022-090 | 22GA STRD WIRE, GREY | 2' |
| 5W001-021 | 1/2" PLASTIC WIRE LOOM | 2' |
| 5W001-006 | 3/8" HEAT-SHRINK TUBING | 0.25' |
| 5W001-012 | SOLDERLESS CONNECTOR 22GA-RED | 6 |
| 7S625-000 | FIRE SLEEVE MYLAR | 1' |
| 7U100-055 | TIE-WRAP, 6" NYLON | 2 |
| **4GR110-040** | **SURGE TANK RELOCATION ASSY** | **1** |
| 4GK010-120 | TAB "B",COIL-RELOC. 6mm,LS1 | 1 |
| 7C060-016 | M6 x 1.00" x 16 HXHD | 1 |
| 7F006-093 | 6mm NYLOCK NUT | 1 |
| 2A017-700 | SPACER, STL.70"L,.75"OD,.33"ID | 1 |
| 2A017-854 | SPACER, STL.85"L,.75"OD,.33"ID | 1 |
| 7C060-045 | M6 x 1.0" x 45 HXHD ZINC PLATE | 1 |
| 7C060-050 | M6 x 1.0" x 50 HXHD ZINC PLATE | 1 |
| 7J250-001 | 1/4"SAE WASHER, PLTD | 4 |
| 7P375-075 | 3/4" HOSE BARB UNION, BRASS | 1 |
| 7R007-001 | NYLON CLAMP 1-1/8" | 2 |
| 7U038-012 | HOSE, Ø3/4" 90°,4 x12" | 1 |
| 7U100-055 | TIE-WRAP, 6" NYLON | 2 |

| PART NUMBER | DESCRIPTION | QTY. |
|---|---|---|
| **4GR130-026** | **OIL FEED LINE ASSY** | **1** |
| 7P125-004 | 1/8"NPT 90° x -4 JIC FTG | 2 |
| 7U250-000-360 | OIL FEED HOSE, 36" -4 STRT | 1 |
| 7U100-055 | TIE-WRAP, 6" NYLON | 5 |
| 7U100-066 | TIE-WRAP, 11" NYLON | 2 |
| 7J006-093 | 6mm WASHER, PLATED | 2 |
| 7C060-050 | 6mm x 1.0" x 50mm HXHD ZINC PLT | 2 |
| 4GL010-020 | ADPTR, ESCALADE OIL FEED | 1 |
| 4GL010-040 | GASKET, 5.3 OIL ADAPTER | 1 |
| **4GR130-036** | **OIL DRAIN ASSY** | **1** |
| 7P375-017 | 3/8"NPT x 1/2" BEADED HSE BRB | 1 |
| 7P375-040 | 3/8" FEMALE ELBOW | 1 |
| 7P375-041 | 3/8"NPT HEX NIPPLE | 1 |
| 7R004-687 | CLAMP, 13/16" ONE EAR | 1 |
| 7R001-008 | #8 STNLS HOSE CLAMP | 1 |
| 7T560-001 | CUTTER, 9/16" ROTABROACH | 1 |
| 7T560-002 | ARBOR, ROTABROACH | 1 |
| 7U030-036 | 1/2" OIL DRAIN HOSE | 1.5' |
| **4GR110-050** | **POWER STEERING ASSY** | **1** |
| 4GR010-050 | BRKT, POWER STEERING RES. | 1 |
| 7P375-050 | 3/8" HOSEMENDER | 1 |
| 7R001-006 | #6 HOSE CLAMP | 2 |
| 7R001-008 | #8 STNLS HOSE CLAMP | 2 |
| 7U032-020 | HOSE, 3/8"ID P/STEERING RET | 24" |
| 7U133-051 | HOSE, RES RETURN 1/2", C5 | 1 |
| 7P625-016 | 5/8" HOSE UNION, BARBED ENDS | 1 |
| **4GR112-011** | **AIR INTAKE ASSY** | **1** |
| 4GR012-011 | DUCT, S/C INTAKE | 1 |
| 4GR012-020 | DUCT, AIR INTAKE PLSTC | 1 |
| 7P375-008 | ELBOW, 3/8" 90° UNION | 1 |
| 7P375-050 | 3/8" HOSEMENDER | 1 |
| 7R002-052 | #52 SAE TYPE "F" SS HOSE CLAMP | 2 |
| 7R002-056 | #56 GOLDSEAL HOSE CLAMP | 2 |
| 7R005-001 | 208-91 T-BOLT CLAMP | 1 |
| 7S350-200 | 3-1/2" x 2" SLEEVE | 1 |
| 7U030-056 | 3/8" PCV HOSE | 0.75' |
| 7U035-001 | 3-1/2" FLEX HOSE | 0.5' |
| 7U100-061 | GROMMET, 3/8"ID 5/8" FLANGE | 1 |
| 7U375-052 | 3/8" VACUUM CAP | 1 |
| **4GR114-010** | **RADIATOR PIPE ASSY** | **1** |
| 4GK014-010 | RADIATOR PIPE, LS1 FBODY Ø1.38" | 1 |
| 7P375-075 | 3/4" HOSE UNION | 1 |
| 7R002-020 | #20 GOLDSEAL HOSE CLAMP | 2 |
| 7R007-001 | NYLON CLAMP 1-1/8" | 2 |
| 7U032-020 | HOSE, 3/8"ID P/STEERING RET | 18' |
| 7U038-012 | HOSE, Ø3/4" 90°, 4 x 12" | 1 |
| 7U133-131 | RADIATOR HOSE | 1 |
| **4GR110-110** | **ASSY, CORVETTE DAMPER PIN** | **1** |
| 4GR010-110 | GUIDE, DWL PIN INST. VETTE | 1 |
| 7C016-010 | BOLT, LS1, M16 - 2.0" | 1 |
| 7C016-100 | BOLT, M16 - 2.0" x 100mm, SHCS | 1 |
| 7U250-026 | DRILL BUSHING, 1/4"ID, 1/2"L | 1 |
| 7U250-019 | DOWEL PIN 1/4" x .5"L | 1 |
| 8F060-042 | FUEL INJECTOR, 42LBS RAIL STYLE | 8 |
| 4GR020-020 | ECM CHIP PACKAGE | 1 |

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| PART NO. | DESCRIPTION | QTY. |
|---|---|---|
| **8N301-150** | **POWER COOLER ASSY, C5 CORVETTE** | **1** |
| **8N201-150** | **DISCHARGE ASSY, C5 CORVETTE** | **1** |
| 8N101-150 | AFTERCOOLER ASSY, C5 CORVETTE | 1 |
| 4GL012-030 | ELBOW, 3.88" - 3.0" x 90° LS1 TRK | 1 |
| 7R002-044 | #44 GOLDSEAL HOSE CLAMP | 4 |
| 7R002-048 | #48 GOLDSEAL HOSE CLAMP | 1 |
| 7R002-064 | #64 GOLDSEAL HOSE CLAMP | 1 |
| 4GR012-030 | DISCHARGE TUBE | 1 |
| 7S275-200 | 2-3/4" x 2" SLEEVE | 2 |
| 8D001-001 | STD COMP BYPASS VALVE | 1 |
| 7R002-016 | #16 GOLDSEAL HOSE CLAMP | 4 |
| 7R001-008 | #8 STNLS HOSE CLAMP | 2 |
| 7P062-187 | 1/16"NPT x 3/16" HOSE BARBED | 1 |
| 7P500-016 | TEE, .5" x .5" x 1/16"NPT METAL | 1 |
| 7U030-046 | 5/32" VACUUM LINE | 6' |
| 7U034-016 | 1" GS HOSE | 0.333' |
| 7U133-100 | HOSE, ELBOW, 90°,1"ID, MOLDED | 1 |
| **8N107-150** | **WATER PUMP ASSEMBLY, C5 CORVETTE** | **1** |
| 5W001-005 | 3/8" PLASTIC WIRE LOOM | 8' |
| 5W001-009 | 16-14GA MALE SLIDE INSULATED | 2 |
| 5W001-010 | 16-14GA FEMALE SLIDE INSULATED | 5 |
| 5W001-011 | 16-14GA EYELET .25" HOLE | 2 |
| 5W001-014 | FUSE HOLDER 10GA WIRE | 1 |
| 5W001-015 | FUSE, BLADE TYPE 20AMP | 1 |
| 5W001-016 | RELAY, BOSCH | 1 |
| 5W001-017 | 3/8" RING TERMINAL 12GA | 1 |
| 5W001-024 | MINI ATC FUSE TAP | 1 |
| 5W001-025 | FEMALE SLIDE,INSULATED, MINI | 1 |
| 5W001-040 | 12-10GA FEMALE SLIDE INSULATED | 1 |
| 5W014-010 | 14GA STRD WIRE RED, UL1015 | 8' |
| 5W014-030 | 14GA STRD WIRE BLACK | 2' |
| 5W016-010 | WIRE, STRND, 16AWG, YELLOW | 1' |
| 7R003-027 | ADEL CLAMP, 1-11/16" | 1 |
| 7U100-044 | TIE-WRAP, 4" NYLON | 8 |
| 8F001-402 | PUMP, WATER, PIERBURG | 1 |
| **8N106-150** | **WATER COOLER ASSY** | **1** |
| 8N006-010 | WATER COOLER | 1 |
| 7A250-074 | 1/4-20 x 3/4" HXHD PLT | 2 |
| 7F250-021 | 1/4-20 NYLOCK NUT ZINC PLTD | 2 |
| 7J250-001 | 1/4" SAE WASHER, PLTD | 2 |
| 7J250-150 | 1/4" FENDER WASHER | 2 |
| **8N105-150** | **WATER TANK MTG ASSY, C5 CORVETTE** | **1** |
| 4GR010-060 | BRKT, WATER RES, C5 CORVETTE | 1 |
| 8N055-030 | TANK, LT1 AFTERCOOLER | 1 |
| 7A250-050 | 1/4-20 x 1/2" SHCS ZINC PLTD | 4 |
| 7J006-093 | 6mm WASHER, PLATED | 4 |
| 7P375-075 | 3/4" HOSE BARB UNION, BRASS | 1 |
| 7P500-026 | 1/2"NPT x 3/4" BARB 90° | 7 |
| 7P500-078 | 1/2"NPT x 3/4" HOSE FIT | 1 |
| 7R007-001 | NYLON CLAMP 1-1/8" | 12 |
| 7U030-065 | 3/4" x 90° HOSE SHORT | 1 |
| 7U038-000 | 3/4" HEATER HOSE | 17' |
| 7U038-012 | HOSE, Ø3/4" 90°,4 x 12" | 1 |
| 7E010-075 | #12 x 3/4" SHT METL SCRW HEX | 3 |
| **8N104-150** | **SUPPORT COMPONENTS, C5 CORVETTE** | **1** |
| 7A250-050 | 1/4-20 x 1/2" SHCS ZINC PLTD | 2 |
| 7J006-093 | 6mm WASHER, PLATED | 2 |
| 7U100-044 | TIE-WRAP, 4" NYLON | 5 |
| 7U100-055 | TIE-WRAP, 6" NYLON | 10 |
| 8N055-050 | PLASTIC CAP, SURGE TANK | 1 |
| 8N056-060 | SURGE TANK, PLASTIC | 1 |



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| PART NO. | DESCRIPTION | QTY. |
|---|---|---|
| **2E229-040** | **V2SQ ASSY, C5 SATIN** | **1** |
| 4GR033-030 | S/C PULLEY, 30-TOOTH, C5 | 1 |
| 2A042-080 | BELT, GATES 640-8MGT-20 | 1 |
| **4GR111-021** | **MTG BRKT ASSEMBLY** | **1** |
| 4GR011-021 | MTG BRKT,S/C,C5 MACH | 1 |
| 7C010-025 | M10-1.5" x 25mm HXCSP | 3 |
| 7C010-035 | M10-1.5" x 35 HXCSG8P | 1 |
| 7J010-002 | 10mm WASHER, ZINC PLATED | 4 |
| 7A375-175 | 3/8-16 x 1-3/4" HXHD GR5 PLT | 1 |
| 7A375-200 | 3/8-16 x 2" HXHD GR5 PLTD | 2 |
| 7A375-300 | 3/8-16 x 3" HXCSG5P | 1 |
| 7A375-324 | 3/8-16 x 3-1/4" HXHD GR5 PLD | 1 |
| 7F375-017 | 3/8-16 NYLOCK NUT | 1 |
| 7J375-044 | 3/8" SAE WASHER, PLTD | 7 |
| 4GR116-300 | IDLER ASSY, 20mm BELT | 1 |
| 4FA016-171 | DUST COVER (IDLER PULLEY) | 1 |
| 4FH016-150 | IDLER PULY, 6-RIB 3" FLANGD | 1 |
| 2A017-462 | SPACER,IDLER SMOOTH 6-RIB | 1 |
| 2D070-171 | JACKSHAFT, C5, H900 | 1 |
| 4GR032-030 | PULLEY, 30-TOOTH JKSHFT, DRIVEN | 1 |
| 7U100-069 | KEY, 3/16" SQUARE x .73" LONG | 2 |
| 2A040-021 | RETAINER, PULLEY, FLATHD | 2 |
| 7B375-076 | 3/8-24 x 3/4" GR8 FLATHEAD | 2 |
| 2A046-104 | BELT K061045-GATES '94 5.0 | 1 |
| 4GR036-360 | PULLEY, JACKSHAFT, 6-RIB 3.60" | 1 |
| 7J012-002 | 12mm WASHER, FLAT | 9 |
| **4GR110-010** | **ASSY, ALT MOUNTING** | **1** |
| 4GR010-010 | PLATE, ALT PRIMARY | 1 |
| 2A017-102-713 | SPACER, ALT PLATE, 10mm | 3 |
| 7C010-045 | 10mm x 1.5" x 45mm HEX HEAD | 3 |
| 4GR010-020 | PLATE, ALT, SEC | 1 |
| 2A017-102-205 | SPACER, SEC, ALT PLATE,C5 | 2 |
| 7C100-110 | M10 x 1.5" x 110 HXHD GR8.8 | 1 |
| 7C010-065 | M10 x 1.5" x 65 BOLT, HEX HD | 2 |
| 7J010-002 | 10mm WASHER, ZINC PLATED | 6 |
| 2A017-462 | SPACER, IDLER SMOOTH 6-RIB | 1 |
| 4GR016-150 | IDLER PLY, 3.5" SMOOTH | 1 |
| 4FA016-171 | DUST COVER (IDLER PULLEY) | 1 |
| 7C010-025 | M10-1.5 x 25mm HXCSP | 1 |
| 2A017-102-128 | SPACER,SPRING TNSNR,C5 | 2 |
| 7C100-085 | 10mm x 1.5" x 85mm, HEX HD BLT, G5 | 1 |
| 5W008-100 | 8GA, RED STRANDED WIRE | 2' |
| 5W001-055 | SPLICE, 8AWG, CRIMP ON | 1 |
| 5W001-035 | LUG, COPPR, 6-2AWG, 3/8" STUD | 1 |
| 5W018-010 | 18GA STRD WIRE RED | 2' |
| 5W022-030 | 22GA STRD WIRE, RED | 2' |
| 5W022-090 | 22GA STRD WIRE, GREY | 2' |
| 5W001-021 | 1/2" PLASTIC WIRE LOOM | 2' |
| 5W001-006 | 3/8" HEAT-SHRINK TUBING | 0.25' |
| 5W001-012 | SOLDERLESS CONNECTOR 22GA-RED | 6 |
| 7S625-000 | FIRE SLEEVE MYLAR | 1' |
| 7U100-055 | TIE-WRAP, 6" NYLON | 2 |
| **4GR110-040** | **SURGE TANK RELOCATION ASSY** | **1** |
| 4GK010-120 | TAB B, COIL-RELOC. 6mm, LS1 | 1 |
| 7C060-016 | M6 x 1.00" x 16 HXHD | 1 |
| 7F006-093 | 6mm NYLOCK NUT | 1 |
| 2A017-700 | SPACER,STL.70L,.75"OD,.33"ID | 1 |
| 2A017-854 | SPACER,STL.85L,.75"OD,.33"ID | 1 |
| 7C060-045 | M6 x 1.0" x 45 HXHD ZINC PLATE | 1 |
| 7C060-050 | M6 x 1.0" x 50 HXHD ZINC PLATE | 1 |
| 7J250-001 | 1/4" SAE WASHER, PLTD | 4 |
| 7P375-075 | 3/4" HOSE BARB UNION, BRASS | 1 |
| 7R007-001 | NYLON CLAMP 1-1/8" | 2 |
| 7U038-012 | HOSE, Ø3/4" 90°,4 x 12" | 1 |
| 7U100-055 | TIE-WRAP, 6" NYLON | 2 |

| PART NUMBER | DESCRIPTION | QTY. |
|---|---|---|
| **4GR130-026** | **OIL FEED LINE ASSY** | **1** |
| 7P125-004 | 1/8"NPT 90° x -4 JIC FTG | 2 |
| 7U250-000-360 | OIL FEED HOSE, 36" -4 STRT | 1 |
| 7U100-055 | TIE-WRAP, 6" NYLON | 5 |
| 7U100-066 | TIE-WRAP, 11" NYLON | 2 |
| 7J006-093 | 6mm WASHER, PLATED | 2 |
| 7C060-050 | 6mm x 1.0" x 50mm HXHD ZINC PLT | 2 |
| 4GL010-020 | ADPTR, ESCALADE OIL FEED | 1 |
| 4GL010-040 | GASKET, 5.3 OIL ADAPTER | 1 |
| **4GR130-036** | **OIL DRAIN ASSY** | **1** |
| 7P375-017 | 3/8"NPT x 1/2" BEADED HSE BRB | 1 |
| 7P375-040 | 3/8" FEMALE ELBOW | 1 |
| 7P375-041 | 3/8"NPT HEX NIPPLE | 1 |
| 7R004-687 | CLAMP, 13/16" ONE EAR | 1 |
| 7R001-008 | #8 STNLS HOSE CLAMP | 1 |
| 7T560-001 | CUTTER, 9/16" ROTABROACH | 1 |
| 7T560-002 | ARBOR,ROTABROACH | 1 |
| 7U030-036 | 1/2" OIL DRAIN HOSE | 1.5' |
| **4GR110-070** | **POWER STEERING ASSY** | **1** |
| 4GR010-070 | BRKT, POWER STEERING RES. 97-C5 | 1 |
| 4GR010-050 | BRKT, POWER STEERING RES. | 1 |
| 7P375-050 | 3/8" HOSEMENDER | 1 |
| 7R001-006 | #6 HOSE CLAMP | 2 |
| 7R001-008 | #8 STNLS HOSE CLAMP | 2 |
| 7U032-020 | HOSE, 3/8"ID P/STEERING RET | 24" |
| 7U133-051 | HOSE, RES RETURN 1/2", C5 | 1 |
| 7P625-016 | 5/8" HOSE UNION, BARBED ENDS | 1 |
| **4GR112-011** | **AIR INTAKE ASSY** | **1** |
| 4GR012-011 | DUCT, S/C INTAKE | 1 |
| 4GR012-020 | DUCT, AIR INTAKE PLSTC | 1 |
| 7P375-008 | ELBOW, 3/8" 90° UNION | 1 |
| 7P375-050 | 3/8" HOSEMENDER | 1 |
| 7R002-052 | #52 SAE TYPE "F" SS HOSE CLAMP | 2 |
| 7R002-056 | #56 GOLDSEAL HOSE CLAMP | 2 |
| 7R005-001 | 208-91 T-BOLT CLAMP | 1 |
| 7S350-200 | 3-1/2" x 2" SLEEVE | 1 |
| 7U030-056 | 3/8" PCV HOSE | 0.75' |
| 7U035-001 | 3-1/2" FLEX HOSE | 0.5' |
| 7U100-061 | GROMMET, 3/8"ID 5/8" FLANGE | 1 |
| 7U375-052 | 3/8" VACUUM CAP | 1 |
| **4GR114-010** | **RADIATOR PIPE ASSY** | **1** |
| 4GK014-010 | RADIATOR PIPE,LS1 FBODY Ø1.38" | 1 |
| 7P375-075 | 3/4" HOSE UNION | 1 |
| 7R002-020 | #20 GOLDSEAL HOSE CLAMP | 2 |
| 7R007-001 | NYLON CLAMP 1-1/8" | 2 |
| 7U032-020 | HOSE, 3/8"ID P/STEERING RET | 18' |
| 7U038-012 | HOSE, Ø3/4" 90°,4 x 12" | 1 |
| 7U133-131 | RADIATOR HOSE | 1 |
| **4GR145-010** | **ASSY, C5 AUTO TRANS-LINE** | **1** |
| 4GR045-010 | TUBE, C5 AUTO TRANS CLR | 1 |
| 7R001-004 | #4 HOSE CLAMP | 1 |
| **4GR110-110** | **ASSY, CORVETTE DAMPER PIN** | **1** |
| 4GR010-110 | GUIDE, DWL PIN INST. VETTE | 1 |
| 7C016-010 | BOLT, LS1, M16-2.0 | 1 |
| 7C016-100 | BOLT, M16-2.0 x 100mm, SHCS | 1 |
| 7U250-026 | DRILL BUSHING, 1/4"ID, 1/2"L | 1 |
| 7U250-019 | DOWEL PIN 1/4" x .5"L | 1 |
| **8F060-042** | **FUEL INJECTOR, 42LBS RAIL STYLE** | **8** |
| **4GR020-020** | **ECM CHIP PACKAGE** | **1** |
| **8N301-150** | **POWER COOLER ASY, C5 CORVETTE** (SEE PG.VII FOR INDIVIDUAL PARTS LIST) | **1** |


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***IMPORTANT:*** *Before beginning installation, verify that all parts are included in the kit. Report any shortages or damaged parts immediately.*

| PART NO. | DESCRIPTION | QTY. |
|---|---|---|
| **2E229-040** | **V2SQ ASSY, C5 SATIN** | **1** |
| 4GR033-030 | S/C PULLEY, 30 TOOTH, C5 | 1 |
| 2A042-080 | BELT, GATES 640-8MGT-20 | 1 |
| **4GR111-021** | **MTG BRKT ASSEMBLY** | **1** |
| 4GR011-021 | MTG BRKT, S/C, C5 MACH | 1 |
| 7C010-025 | M10-1.5" x 25mm HXCSP | 3 |
| 7C010-035 | M10-1.5" x 35 HXCSG8P | 1 |
| 7J010-002 | 10mm WASHER, ZINC PLATED | 4 |
| 7A375-175 | 3/8-16 x 1-3/4" HXHD GR5 PLT | 1 |
| 7A375-200 | 3/8-16 x 2" HXHD GR5 PLTD | 2 |
| 7A375-300 | 3/8-16 x 3" HXCS G5 P | 1 |
| 7A375-324 | 3/8-16 x 3-1/4" HXHD GR5 PLD | 1 |
| 7F375-017 | 3/8-16 NYLOCK NUT | 1 |
| 7J375-044 | 3/8" SAE WASHER, PLTD | 7 |
| 4GR116-300 | IDLER ASSY, 20mm BELT | 1 |
| 4FA016-171 | DUST COVER (IDLER PULLEY) | 1 |
| 4FH016-150 | IDLER PULY, 6-RIB 3" FLANGD | 1 |
| 2A017-462 | SPACER, IDLER SMOOTH 6-RIB | 1 |
| 2D070-171 | JACKSHAFT, C5, H900 | 1 |
| 4GR032-030 | PULLEY, 30-TOOTH JKSHFT, DRIVEN | 1 |
| 7U100-069 | KEY, 3/16" SQUARE x .73" LONG | 2 |
| 2A040-021 | RETAINER, PULLEY, FLATHD | 2 |
| 7B375-076 | 3/8-24 x 3/4" GR8 FLATHEAD | 2 |
| 2A046-104 | BELT K061045-GATES '94 5.0 | 1 |
| 4GR036-360 | PULLEY, JACKSHAFT, 6-RIB 3.60" | 1 |
| 7J012-002 | 12mm WASHER, FLAT | 9 |
| **4GR110-010** | **ASSY, ALT MOUNTING** | **1** |
| 4GR010-010 | PLATE, ALT PRIMARY | 1 |
| 2A017-102-713 | SPACER, ALT PLATE, 10mm | 3 |
| 7C010-045 | 10mm x 1.5" x 45mm HEX HEAD | 3 |
| 4GR010-020 | PLATE, ALT, SEC | 1 |
| 2A017-102-205 | SPACER,SEC,ALT PLATE,C5 | 2 |
| 7C100-110 | M10 x 1.5" x 110 HXHD GR8.8 | 1 |
| 7C010-065 | M10 x 1.5" x 65 BOLT, HEX HD | 2 |
| 7J010-002 | 10mm WASHER, ZINC PLATED | 6 |
| 2A017-462 | SPACER, IDLER SMOOTH 6-RIB | 1 |
| 4GR016-150 | IDLER PLY, 3.5" SMOOTH | 1 |
| 4FA016-171 | DUST COVER (IDLER PULLEY) | 1 |
| 7C010-025 | M10-1.5" x 25mm HXCSP | 1 |
| 2A017-102-128 | SPACER, SPRING TNSNR,C5 | 2 |
| 7C100-085 | 10mm x 1.5" x 85mm, HEX HD BLT, G5 | 1 |
| 5W008-100 | 8GA, RED STRANDED WIRE | 2' |
| 5W001-055 | SPLICE, 8AWG, CRIMP ON | 1 |
| 5W001-035 | LUG, COPPR, 6-2AWG, 3/8" STUD | 1 |
| 5W018-010 | 18GA STRD WIRE, RED | 2' |
| 5W022-030 | 22GA STRD WIRE, RED | 2' |
| 5W022-090 | 22GA STRD WIRE, GREY | 2' |
| 5W001-021 | 1/2" PLASTIC WIRE LOOM | 2' |
| 5W001-006 | 3/8" HEAT-SHRINK TUBING | 0.25' |
| 5W001-012 | SOLDERLESS CONNECTOR 22GA-RED | 6 |
| 7S625-000 | FIRE SLEEVE MYLAR | 1' |
| 7U100-055 | TIE-WRAP, 6" NYLON | 2 |
| **4GR110-040** | **SURGE TANK RELOCATION ASSY** | **1** |
| 4GK010-120 | TAB "B", COIL-RELOC. 6mm, LS1 | 1 |
| 7C060-016 | M6 x 1.00" x 16 HXHD | 1 |
| 7F006-093 | 6mm NYLOCK NUT | 1 |
| 2A017-700 | SPACER, STL .70"L, .75"OD, .33"ID | 1 |
| 2A017-854 | SPACER, STL .85"L, .75"OD, .33"ID | 1 |
| 7C060-045 | M6 x 1.0" x 45 HXHD ZINC PLATE | 1 |
| 7C060-050 | M6 x 1.0" x 50 HXHD ZINC PLATE | 1 |
| 7J250-001 | 1/4" SAE WASHER, PLTD | 4 |
| 7P375-075 | 3/4" HOSE BARB UNION, BRASS | 1 |
| 7R007-001 | NYLON CLAMP 1-1/8" | 2 |
| 7U038-012 | HOSE, Ø3/4" 90°, 4 x12" | 1 |
| 7U100-055 | TIE-WRAP, 6" NYLON | 2 |
| **4GR130-026** | **OIL FEED LINE ASSY** | **1** |
| 7P125-004 | 1/8"NPT 90° x -4 JIC FTG | 2 |
| 7U250-000-360 | OIL FEED HOSE, 36" -4 STRT | 1 |

| PART NUMBER | DESCRIPTION | QTY. |
|---|---|---|
| 7U100-055 | TIE-WRAP, 6" NYLON | 5 |
| 7U100-066 | TIE-WRAP, 11" NYLON | 2 |
| 7J006-093 | 6mm WASHER, PLATED | 2 |
| 7C060-050 | 6mm x 1.0 x 50mm HXHD ZINC PLT | 2 |
| 4GL010-020 | ADPTR, ESCALADE OIL FEED | 1 |
| 4GL010-040 | GASKET, 5.3 OIL ADAPTER | 1 |
| **4GR130-036** | **OIL DRAIN ASSY** | **1** |
| 7P375-017 | 3/8"NPT x 1/2" BEADED HSE BRB | 1 |
| 7P375-040 | 3/8" FEMALE ELBOW | 1 |
| 7P375-041 | 3/8"NPT HEX NIPPLE | 1 |
| 7R004-687 | CLAMP, 13/16" ONE EAR | 1 |
| 7R001-008 | #8 STNLS HOSE CLAMP | 1 |
| 7T560-001 | CUTTER, 9/16" ROTABROACH | 1 |
| 7T560-002 | ARBOR, ROTABROACH | 1 |
| 7U030-036 | 1/2" OIL DRAIN HOSE | 1.5' |
| **4GR110-050** | **POWER STEERING ASSY** | **1** |
| 4GR010-050 | BRKT, POWER STEERING RES. | 1 |
| 7P375-050 | 3/8" HOSEMENDER | 1 |
| 7R001-006 | #6 HOSE CLAMP | 2 |
| 7R001-008 | #8 STNLS HOSE CLAMP | 2 |
| 7U032-020 | HOSE, 3/8"ID P/STEERING RET | 24" |
| 7U133-051 | HOSE, RES RETURN 1/2", C5 | 1 |
| 7P625-016 | 5/8" HOSE UNION, BARBED ENDS | 1 |
| **4GR112-011** | **AIR INTAKE ASSY** | **1** |
| 4GR012-011 | DUCT, S/C INTAKE | 1 |
| 4GR012-020 | DUCT, AIR INTAKE PLSTC | 1 |
| 7P375-008 | ELBOW, 3/8" 90° UNION | 1 |
| 7P375-050 | 3/8" HOSEMENDER | 1 |
| 7R002-052 | #52 SAE TYPE "F" SS HOSE CLAMP | 2 |
| 7R002-056 | #56 GOLDSEAL HOSE CLAMP | 2 |
| 7R005-001 | 208-91 T-BOLT CLAMP | 1 |
| 7S350-200 | 3-1/2" x 2" SLEEVE | 1 |
| 7U030-056 | 3/8" PCV HOSE | 0.75' |
| 7U035-001 | 3-1/2" FLEX HOSE | 0.5' |
| 7U100-061 | GROMMET, 3/8"ID 5/8" FLANGE | 1 |
| 7U375-052 | 3/8" VACUUM CAP | 1 |
| **4GR114-010** | **RADIATOR PIPE ASSY** | **1** |
| 4GK014-010 | RADIATOR PIPE, LS1 FBODY Ø1.38" | 1 |
| 7P375-075 | 3/4" HOSE UNION | 1 |
| 7R002-020 | #20 GOLDSEAL HOSE CLAMP | 2 |
| 7R007-001 | NYLON CLAMP 1-1/8" | 2 |
| 7U032-020 | HOSE, 3/8"ID P/STEERING RET | 18' |
| 7U038-012 | HOSE, Ø3/4" 90°,4 x12" | 1 |
| 7U133-131 | RADIATOR HOSE | 1 |
| **4GR145-060** | **ASSY, C5 AUTO TRANS-LINE** | **1** |
| 4GR045-010 | TUBE, C5 AUTO TRANS CLR | 1 |
| 7R001-004 | #4 HOSE CLAMP | 1 |
| **4GR110-090** | **ABS RELOCATION ASSEMBLY** | **1** |
| 4GR010-090 | ABS RELOCATION BRACKET | 1 |
| 4GR010-100 | ABS SUPPORT STRAP | 1 |
| 7U100-061 | GROMMET, 3/8"ID 5/8" FLANGE | 1 |
| 7A250-074 | 1/4-20 x 3/4" HXHD PLT | 3 |
| 7F250-021 | 1/4-20 NYLOCK NUT ZINC | 3 |
| **4GR110-110** | **ASSY, CORVETTE DAMPER PIN** | **1** |
| 4GR010-110 | GUIDE, DWL PIN INST. VETTE | 1 |
| 7C016-010 | BOLT, LS1, M16-2.0 | 1 |
| 7C016-100 | BOLT, M16-2.0 x 100mm, SHCS | 1 |
| 7U250-026 | DRILL BUSHING, 1/4"ID, 1/2"L | 1 |
| 7U250-019 | DOWEL PIN 1/4" x .5"L | 1 |
| **8F060-042** | **FUEL INJECTOR, 42 LBS RAIL STYLE** | **8** |
| **4GR020-020** | **ECM CHIP PACKAGE** | **1** |
| **8N301-150** | **POWER COOLER ASY, C5 CORVETTE** (SEE PG.VII FOR INDIVIDUAL PARTS LIST) | **1** |



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# 2001-2004 Corvette LS1 C5
## Part No. 4GR218-020SQ
# PARTS LIST

VORTECH ENGINEERING, LLC

***IMPORTANT:*** *Before beginning installation, verify that all parts are included in the kit. Report any shortages or damaged parts immediately.*

| PART NO. | DESCRIPTION | QTY. |
|---|---|---|
| **2E229-020** | **V2SQ ASSY, C5 SATIN** | **1** |
| 4GR033-032 | S/C PULLEY, 32-TOOTH, C5 | 1 |
| 2A042-080 | BELT, GATES 640-8MGT-20 | 1 |
| **4GR111-021** | **MTG BRKT ASSEMBLY** | **1** |
| 4GR011-021 | MTG BRKT, S/C, C5 MACH | 1 |
| 7C010-025 | M10-1.5" x 25mm HXCS P | 3 |
| 7C010-035 | M10-1.5" x 35 HXCS G8 P | 1 |
| 7J010-002 | 10mm WASHER, ZINC PLATED | 4 |
| 7A375-175 | 3/8-16 x 1-3/4" HXHD GR5 PLT | 1 |
| 7A375-200 | 3/8-16 x 2" HXHD GR5 PLTD | 2 |
| 7A375-300 | 3/8-16 x 3" HXCS G5 P | 1 |
| 7A375-324 | 3/8-16 x 3-1/4" HXHD GR5 PLD | 1 |
| 7F375-017 | 3/8-16 NYLOCK NUT | 1 |
| 7J375-044 | 3/8" SAE WASHER, PLTD | 7 |
| 4GR116-300 | IDLER ASSY, 20mm BELT | 1 |
| 4FA016-171 | DUST COVER (IDLER PULLEY) | 1 |
| 4FH016-150 | IDLER PULY, 6-RIB 3" FLANGD | 1 |
| 2A017-462 | SPACER, IDLER SMOOTH 6-RIB | 1 |
| 2D070-171 | JACKSHAFT, C5, H900 | 1 |
| 4GR032-030 | PULLEY, 30-TOOTH JKSHFT, DRIVEN | 1 |
| 7U100-069 | KEY, 3/16" SQUARE x .73" LONG | 2 |
| 2A040-021 | RETAINER, PULLEY, FLATHD | 2 |
| 7B375-076 | 3/8-24 x 3/4" GR8 FLATHEAD | 2 |
| 2A046-104 | BELT K061045-GATES '94 5.0 | 1 |
| 4GR036-360 | PULLEY, JACKSHAFT, 6-RIB 3.60" | 1 |
| 7J012-002 | 12mm WASHER, FLAT | 9 |
| **4GR110-010** | **ASSY, ALT MOUNTING** | **1** |
| 4GR010-010 | PLATE, ALT PRIMARY | 1 |
| 2A017-102-713 | SPACER, ALT PLATE, 10mm | 3 |
| 7C010-045 | 10mm x 1.5" x 45mm HEX HEAD | 3 |
| 4GR010-020 | PLATE, ALT, SEC | 1 |
| 2A017-102-205 | SPACER,SEC, ALT PLATE,C5 | 2 |
| 7C100-110 | M10 x 1.5" x 110 HXHD GR8.8 | 1 |
| 7C010-065 | M10 x 1.5" x 65 BOLT, HEX HD | 2 |
| 7J010-002 | 10mm WASHER, ZINC PLATED | 6 |
| 2A017-462 | SPACER,IDLER SMOOTH 6-RIB | 1 |
| 4GR016-150 | IDLER PLY, 3.5" SMOOTH | 1 |
| 4FA016-171 | DUST COVER (IDLER PULLEY) | 1 |
| 7C010-025 | M10-1.5" x 25mm HXCSP | 1 |
| 2A017-102-128 | SPACER,SPRING TNSNR,C5 | 2 |
| 7C100-085 | 10mm x 1.5" x 85mm, HEX HD BLT,G5 | 1 |
| 5W008-100 | 8GA, RED STRANDED WIRE | 2' |
| 5W001-055 | SPLICE, 8AWG,CRIMP ON | 1 |
| 5W001-035 | LUG, COPPR, 6-2AWG, 3/8" STUD | 1 |
| 5W018-010 | 18GA STRD WIRE RED | 2' |
| 5W022-030 | 22GA STRD WIRE, RED | 2' |
| 5W022-090 | 22GA STRD WIRE, GREY | 2' |
| 5W001-021 | 1/2" PLASTIC WIRE LOOM | 2' |
| 5W001-006 | 3/8" HEAT-SHRINK TUBING | 0.25' |
| 5W001-012 | SOLDERLESS CONNECTOR 22GA-RED | 6 |
| 7S625-000 | FIRE SLEEVE MYLAR | 1' |
| 7U100-055 | TIE-WRAP, 6" NYLON | 2 |
| **4GR110-040** | **SURGE TANK RELOCATION ASSY** | **1** |
| 4GK010-120 | TAB "B", COIL-RELOC.6mm, LS1 | 1 |
| 7C060-016 | M6 x 1.00" x 16 HXHD | 1 |
| 7F006-093 | 6mm NYLOCK NUT | 1 |
| 2A017-700 | SPACER, STL .70"L, .75"OD, .33"ID | 1 |
| 2A017-854 | SPACER, STL .85"L, .75"OD, .33"ID | 1 |
| 7C060-045 | M6 x 1.0" x 45 HXHD ZINC PLATE | 1 |
| 7C060-050 | M6 x 1.0" x 50 HXHD ZINC PLATE | 1 |
| 7J250-001 | 1/4" SAE WASHER, PLTD | 4 |
| 7P375-075 | 3/4" HOSE BARB UNION, BRASS | 1 |
| 7R007-001 | NYLON CLAMP 1-1/8" | 2 |
| 7U038-012 | HOSE, Ø3/4" 90°,4 x 12" | 1 |
| 7U100-055 | TIE-WRAP, 6" NYLON | 2 |

| PART NUMBER | DESCRIPTION | QTY. |
|---|---|---|
| **4GR130-026** | **OIL FEED LINE ASSY** | **1** |
| 7P125-004 | 1/8"NPT 90° x -4 JIC FTG | 2 |
| 7U250-000-360 | OIL FEED HOSE, 36" -4 STRT | 1 |
| 7U100-055 | TIE-WRAP, 6" NYLON | 5 |
| 7U100-066 | TIE-WRAP, 11" NYLON | 2 |
| 7J006-093 | 6mm WASHER, PLATED | 2 |
| 7C060-050 | 6mm x 1.0" x 50mm HXHD ZINC PLT | 2 |
| 4GL010-020 | ADPTR, ESCALADE OIL FEED | 1 |
| 4GL010-040 | GASKET, 5.3 OIL ADAPTER | 1 |
| **4GR130-036** | **OIL DRAIN ASSY** | **1** |
| 7P375-017 | 3/8"NPT x 1/2" BEADED HSE BRB | 1 |
| 7P375-040 | 3/8" FEMALE ELBOW | 1 |
| 7P375-041 | 3/8"NPT HEX NIPPLE | 1 |
| 7R004-687 | CLAMP, 13/16" ONE EAR | 1 |
| 7R001-008 | #8 STNLS HOSE CLAMP | 1 |
| 7T560-001 | CUTTER, 9/16" ROTABROACH | 1 |
| 7T560-002 | ARBOR, ROTABROACH | 1 |
| 7U030-036 | 1/2" OIL DRAIN HOSE | 1.5' |
| **4GR110-050** | **POWER STEERING ASSY** | **1** |
| 4GR010-050 | BRKT, POWER STEERING RES. | 1 |
| 7P375-050 | 3/8" HOSEMENDER | 1 |
| 7R001-006 | #6 HOSE CLAMP | 2 |
| 7R001-008 | #8 STNLS HOSE CLAMP | 2 |
| 7U032-020 | HOSE, 3/8"ID P/STEERING RET | 24" |
| 7U133-051 | HOSE, RES RETURN 1/2", C5 | 1 |
| 7P625-016 | 5/8" HOSE UNION, BARBED ENDS | 1 |
| **4GR112-011** | **AIR INTAKE ASSY** | **1** |
| 4GR012-011 | DUCT, S/C INTAKE | 1 |
| 4GR012-020 | DUCT, AIR INTAKE PLSTC | 1 |
| 7P375-008 | ELBOW, 3/8" 90° UNION | 1 |
| 7P375-050 | 3/8" HOSEMENDER | 1 |
| 7R002-052 | #52 SAE TYPE "F" SS HOSE CLAMP | 2 |
| 7R002-056 | #56 GOLDSEAL HOSE CLAMP | 2 |
| 7R005-001 | 208-91 T-BOLT CLAMP | 1 |
| 7S350-200 | 3-1/2" x 2" SLEEVE | 1 |
| 7U030-056 | 3/8" PCV HOSE | 0.75' |
| 7U035-001 | 3-1/2" FLEX HOSE | 0.5' |
| 7U100-061 | GROMMET, 3/8"ID 5/8" FLANGE | 1 |
| 7U375-052 | 3/8" VACUUM CAP | 1 |
| **4GR114-010** | **RADIATOR PIPE ASSY** | **1** |
| 4GK014-010 | RADIATOR PIPE, LS1 FBODY Ø1.38" | 1 |
| 7P375-075 | 3/4" HOSE UNION | 1 |
| 7R002-020 | #20 GOLDSEAL HOSE CLAMP | 2 |
| 7R007-001 | NYLON CLAMP 1-1/8" | 2 |
| 7U032-020 | HOSE, 3/8"ID P/STEERING RET | 18' |
| 7U038-012 | HOSE, Ø3/4" 90°, 4 x 12" | 1 |
| 7U133-131 | RADIATOR HOSE | 1 |
| 4GR145-020 | ASSY, 01-04 C5 AUTO TRANS LINE | 1 |
| 7R001-004 | #4 HOSE CLAMP | 3 |
| 7P375-050 | 3/8" HOSE MENDER | 1 |
| 7U032-020 | HOSE, 3/8"I.D. | 6" |
| **4GR110-110** | **ASSY, CORVETTE DAMPER PIN** | **1** |
| 4GR010-110 | GUIDE, DWL PIN INST. VETTE | 1 |
| 7C016-010 | BOLT, LS1, M16 - 2.0" | 1 |
| 7C016-100 | BOLT, M16 - 2.0" x 100mm, SHCS | 1 |
| 7U250-026 | DRILL BUSHING, 1/4"ID, 1/2"L | 1 |
| 7U250-019 | DOWEL PIN 1/4" x .5"L | 1 |
| **8F060-042** | **FUEL INJECTOR, 42LBS RAIL STYLE** | **8** |
| **4GR020-020** | **ECM CHIP PACKAGE** | **1** |
| **8N301-150** | **POWER COOLER ASY, C5 CORVETTE** (SEE PG.VII FOR INDIVIDUAL PARTS LIST) | **1** |


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# 1997-2004 C5 Corvette Tuner Base Kit

**Part No. 3GR218-010**

VORTECH ENGINEERING, LLC

# PARTS LIST

***IMPORTANT:*** *Before beginning installation, verify that all parts are included in the kit. Report any shortages or damaged parts immediately.*

| PART NO. | DESCRIPTION | QTY. |
|---|---|---|
| **3GR111-021** | **MTG BRKT ASSEMBLY** | **1** |
| 4GR011-021 | MTG BRKT, S/C, C5 MACH | 1 |
| 7C010-025 | M10-1.5" x 25mm HXCS P | 3 |
| 7C010-035 | M10-1.5" x 35 HXCS G8 P | 1 |
| 7J010-002 | 10mm WASHER, ZINC PLATED | 4 |
| 7A375-175 | 3/8-16 x 1-3/4" HXHD GR5 PLT | 1 |
| 7A375-200 | 3/8-16 x 2" HXHD GR5 PLTD | 2 |
| 7A375-300 | 3/8-16 x 3" HXCS G5 P | 1 |
| 7A375-324 | 3/8-16 x 3-1/4" HXHD GR5 PLD | 1 |
| 7F375-017 | 3/8-16 NYLOCK NUT | 1 |
| 7J375-044 | 3/8" SAE WASHER, PLTD | 7 |
| 4GR116-300 | IDLER ASSY, 20mm BELT | 1 |
| 4FA016-171 | DUST COVER (IDLER PULLEY) | 1 |
| 4FH016-150 | IDLER PULLY, 6-RIB 3" FLANGD | 1 |
| 2A017-462 | SPACER,IDLER SMOOTH 6-RIB | 1 |
| 2D070-171 | JACKSHAFT, C5, H900 | 1 |
| 7U100-069 | KEY, 3/16" SQUARE x .73" LONG | 2 |
| 2A040-021 | RETAINER, PULLEY, FLATHD | 2 |
| 7B375-076 | 3/8-24 x 3/4" GR8 FLATHEAD | 2 |
| 2A046-104 | BELT K061045-GATES '94 5.0 | 1 |
| 4GR036-360 | PULLEY, JACKSHAFT, 6-RIB 3.60" | 1 |
| 7J012-002 | 12mm WASHER, FLAT | 9 |
| **4GR110-010** | **ASSY, ALT MOUNTING** (SEE PG VI FOR INDIVIDUAL PARTS LIST) | **1** |
| **4GR110-040** | **SURGE TANK RELOCATION ASSY** (SEE PG VI FOR INDIVIDUAL PARTS LIST) | **1** |
| **4GR130-026** | **OIL FEED LINE ASSY** | **1** |
| 7P125-004 | 1/8"NPT 90° x -4 JIC FTG | 2 |
| 7U250-000-360 | OIL FEED HOSE, 36" -4 STRT | 1 |
| 7U100-055 | TIE-WRAP, 6" NYLON | 5 |
| 7U100-066 | TIE-WRAP, 11" NYLON | 2 |
| 7J006-093 | 6mm WASHER, PLATED | 2 |
| 7C060-050 | 6mm x 1.0" x 50mm HXHD ZINC PLT | 2 |
| 4GL010-020 | ADPTR, ESCALADE OIL FEED | 1 |
| 4GL010-040 | GASKET, 5.3 OIL ADAPTER | 1 |
| **4GR130-036** | **OIL DRAIN ASSY** | **1** |
| 7P375-017 | 3/8"NPT x 1/2" BEADED HSE BRB | 1 |
| 7P375-040 | 3/8" FEMALE ELBOW | 1 |
| 7P375-041 | 3/8"NPT HEX NIPPLE | 1 |
| 7R004-687 | CLAMP, 13/16" ONE EAR | 1 |
| 7R001-008 | #8 STNLS HOSE CLAMP | 1 |
| 7T560-001 | CUTTER,9/16" ROTABROACH | 1 |
| 7T560-002 | ARBOR, ROTABROACH | 1 |
| 7U030-036 | 1/2" OIL DRAIN HOSE | 1.5' |
| **4GR110-050** | **POWER STEERING ASSY** | **1** |
| 4GR010-050 | BRKT, POWER STEERING RES. | 1 |
| 7P375-050 | 3/8" HOSEMENDER | 1 |
| 7R001-006 | #6 HOSE CLAMP | 2 |
| 7R001-008 | #8 STNLS HOSE CLAMP | 2 |
| 7U032-020 | HOSE, 3/8"ID P/STEERING RET | 24" |
| 7U133-051 | HOSE, RES RETURN 1/2", C5 | 1 |
| 7P625-016 | 5/8" HOSE UNION, BARBED ENDS | 1 |
| **4GR112-020** | **AIR INTAKE ASSY - NO S/C DUCT** | **1** |
| 4GR012-020 | DUCT, AIR INTAKE PLSTC | 1 |
| 7P375-008 | ELBOW, 3/8" 90° UNION | 1 |

| PART NUMBER | DESCRIPTION | QTY. |
|---|---|---|
| 7P375-050 | 3/8" HOSEMENDER | 1 |
| 7R002-052 | #52 SAE TYPE "F" SS HOSE CLAMP | 2 |
| 7R002-056 | #56 GOLDSEAL HOSE CLAMP | 2 |
| 7R005-001 | 208-91 T-BOLT CLAMP | 1 |
| 7S350-200 | 3-1/2" x 2" SLEEVE | 1 |
| 7U030-056 | 3/8" PCV HOSE | 0.75' |
| 7U035-001 | 3-1/2" FLEX HOSE | 0.5' |
| 7U100-061 | GROMMET, 3/8"ID 5/8" FLANGE | 1 |
| 7U375-052 | 3/8" VACUUM CAP | 1 |
| **4GR114-010** | **RADIATOR PIPE ASSY** | **1** |
| 4GK014-010 | RADIATOR PIPE, LS1 FBODY Ø1.38" | 1 |
| 7P375-075 | 3/4" HOSE UNION | 1 |
| 7R002-020 | #20 GOLDSEAL HOSE CLAMP | 2 |
| 7R007-001 | NYLON CLAMP 1-1/8" | 2 |
| 7U032-020 | HOSE, 3/8"ID P/STEERING RET | 18' |
| 7U038-012 | HOSE, Ø3/4" 90°, 4 x 12" | 1 |
| 7U133-131 | RADIATOR HOSE | 1 |
| **4GR110-110** | **ASSY, CORVETTE DAMPER PIN** | **1** |
| 4GR010-110 | GUIDE, DWL PIN INST. VETTE | 1 |
| 7C016-010 | BOLT, LS1, M16 - 2.0" | 1 |
| 7C016-100 | BOLT, M16 - 2.0" x 100mm, SHCS | 1 |
| 7U250-026 | DRILL BUSHING, 1/4"ID, 1/2"L | 1 |
| 7U250-019 | DOWEL PIN 1/4" x .5"L | 1 |
| **8N301-150** | **POWER COOLER ASSY, C5 CORVETTE** (SEE PG.VII FOR INDIVIDUAL PARTS LIST) | **1** |

## KIT NOTES - To make a complete kit, order the following applicable items:

1. **A. S-Trim:** 2E129-140 (V2) or 2A129-140 (V1)
   **B. SC-Trim:** 2E129-150 (V2) 2A129-150 (V1)
   **C. T-Trim:** 2E129-160 (V2) or 2A129-160 (V1)
2. **Jackshaft Pulley:** 4GR032-030 or -032 Jackshaft pulley (-030 does not work with 4GR033-028)
3. **Supercharger pulley:** 4GR033-028, -030, -032 or -034 (-034 only used with a 30T jackshaft pulley)
4. 4GR020-020 ECM chip package (Superchips Microtuner)
5. 8F060-042 (42 lb/hr) or 8F060-055 (55 lb/hr) fuel injectors (8 each)
6. Automatic trans line: 4GR145-010 (97-00 M.Y.), 4GR145-020 (01-04 M.Y.)
7. 4GR110-090 ABS Relocation Assy (Need for 1999-2000 vehicles)
8. 4GR010-070 Brkt, power steering res. (Need for 1997 vehicles)
9. 5A102-013 Fuel pump voltage booster assembly (increases fuel flow)



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## 1. PREPARATION/REMOVAL

**A.** Disconnect the negative cable at the battery.

**B.** Remove all ducting between air filter cover and throttle body.

**C.** Remove the air temperature sensor (if equipped) and grommet from factory air inlet duct and set aside.

**D.** Remove both of the coil/fuel rail covers (plastic) on top of the engine and set aside.

**E.** Remove the valve cover breather hose from the passenger side of the throttle body and set aside temporarily.

**F.** Cap off throttle body nipple with supplied 3/8" vacuum cap.

**G.** Remove the accessory drive belt.

**H.** Remove and set aside the accessory drive belt spring tensioner. Remove the 6-rib pulley and dust cover from the spring tensioner and set aside for installation in a future step.

**I.** Disconnect the wiring and remove the alternator from the vehicle.

**J.** Drain the engine coolant system. Remove the four screws securing the plastic upper radiator mount (directly on top of the radiator). Disconnect the upper radiator hose where it attaches to the radiator.

**K.** Remove the power steering hoses from the reservoir and set them aside. Remove the reservoir from the vehicle.

**L.** For vehicles equipped with an ABS module in front of the power steering pump, disconnect the brake lines and electrical connector from the ABS module. Mark each of the brake lines to ensure that they will be re-connected in the correct position on the ABS Module. Remove the screws and the steering rack bolts to free the ABS unit below the vehicle. Remove the assembly (with the factory bracket still attached) from the vehicle.

**M.** Disconnect the high-pressure power steering hose from the pump.

**N.** Remove the power steering pump pulley and power steering pump from the engine.

**O.** Remove the power steering pump mounting bracket (4 screws).

**P.** Remove the three fasteners securing the engine coolant reservoir to the vehicle. Remove the two studs on the inner fender.



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## 2. HARMONIC DAMPER DOWEL PIN INSTALLATION

**NOTE:** *The purpose of this section is to provide access to the harmonic damper bolt area so that the crankshaft can be pinned to the damper to prevent the damper from spinning on the crank shaft. The following steps will work on all or most applications. If it is not possible to get adequate clearance by performing the following steps, follow the manufacturers steps for removing the harmonic damper until there is sufficient room to work in.*

**A.** Remove the front wheels from the vehicle.

**B.** Remove the outer ball joint from the spindle on each side of the vehicle.

**C.** Remove the two nuts and bolts securing the steering rack to the cross member.

**D.** Loosen the power steering cooler mounting bolts and drop the cooler (if equipped) down for access temporarily.

**E.** With the steering wheel pointed to the right as far as it will go, carefully lift the rack until it comes to a stop against the frame rail on both sides. Move it around to provide maximum clearance.

**F.** Secure the rack in this position by supporting it up (wood block, etc.) or securing it from above with tie wraps etc. (See *Fig. 2-a*.)

**G.** Disconnect the wiring and remove the engine starter hardware. Push the starter forward and allow it to rest on the oil pan temporarily. Attach the GM J342386 flywheel holding tool in the starter location.

**H.** Remove the crankshaft damper bolt.

**NOTE:** *Removal of the engine cooling fans allow more working space during these steps.*

**I.** Install the supplied drill guide with the raised-section piloting in the damper bore. Secure in place by installing the supplied socket head cap screw. Do not over-tighten the screw as it may distort the drill guide (its purpose is just to hold the guide in place while drilling).

**J.** Using a small drill motor, mark a Ø1/4" drill bit with electrical tape or a drill stop so that the hole will be deep enough for the supplied 1/2" long dowel pin. (See *Fig. 2-b.*) (The drill bushing is 1/2" long, so with the guide installed, the drill should go in at least 1" from the front of the drill bushing.)

**K.** Make sure that when drilling the hole, the tool is perpendicular to the damper. Use extra care.

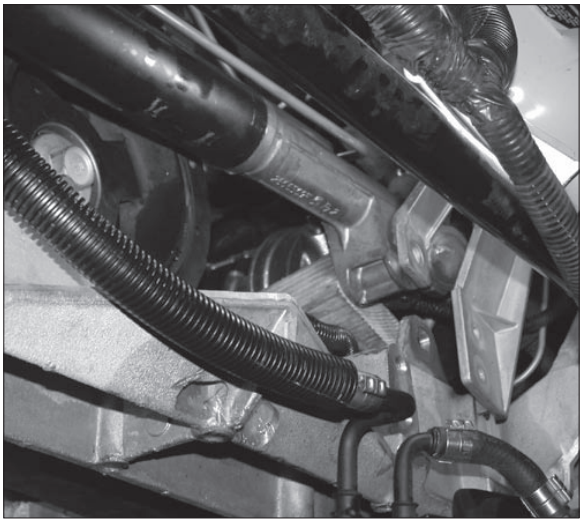

*Fig. 2-a*

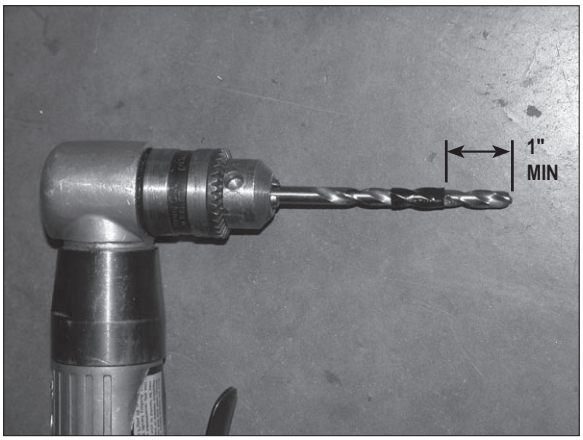


*Fig. 2-b*


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## 2. HARMONIC DAMPER DOWEL PIN INSTALLATION, cont'd.

**NOTE:** *If it is necesary to rotate the engine to install the remaining dowel pins, tap the installed dowel pin flush with the surface, remove the socket head screw, remove the flywheel holding tool (if installed), install the old damper retaining screw and rotate the damper to the desired position.*

**L.** Remove the socket-head cap screw and drill guide.

**M.** Install the supplied Ø1/4" x 1/2" long dowel pin into the drilled hole with the rounded end pointed toward the front of the vehicle.

**N.** Verify that the dowel pin is recessed slightly from the damper face.

**O.** Install the supplied new damper retaining screw as follows:

**1.** Lightly coat the threads of the new retaining screw with red threadlocker. Install and torque to 37 ft-lbs.

**2.** Using a 1/2" breaker bar, tighten the retaining screw an additional 120° or tighten with a torque wrench to 250 ft-lbs.

**P.** Remove the flywheel tool, re-install the starter and re-connect the wiring.

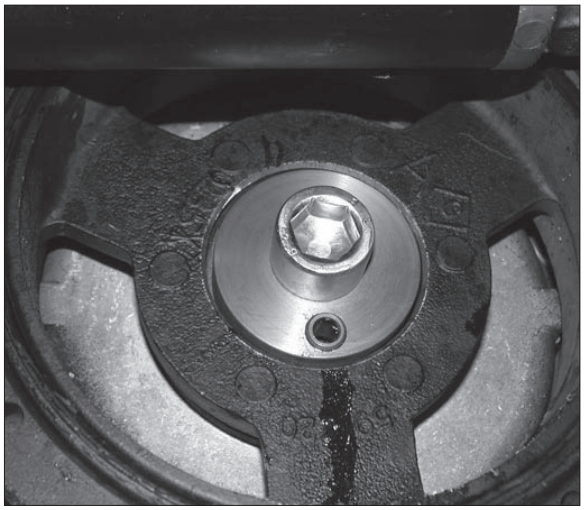

*Fig. 2-c*

## 3. OIL DRAIN LINE INSTALLATION

**NOTE:** *Lowering of the sway bar will aid in oil drain installation access.*

**A.** To provide an oil drain for the supercharger, it is necessary to make a hole in the front of the oil pan. Locate and center punch the hole per *Fig. 3-c*. This hole should be centered .40" from bottom of oil pan lip between the last bolt and the driver's side of the oil pan. **Drill as far over to the driver's side as possible to avoid contacting internal engine components!**

**B.** Drill 1/8" pilot hole at the marked location by positioning the drill as shown in *Fig. 3-a*.

**C.** Use the supplied 9/16" roto broach to drill hole in oil pan. Break through pan carefully so that cut out piece does not go into the oil pan.

**D.** Tap the hole with a 3/8" NPT to approximately 1/2" deep or until fitting can be started. Pack the flutes of the tap with heavy grease to hold any loose chips.

**E.** Thoroughly clean the threaded area. Reach inside oil pan and retrieve any stray chips.

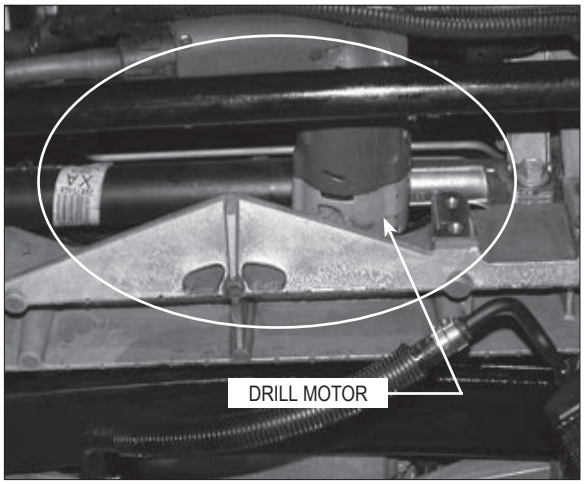


*Fig. 3-a*



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Apply a small amount of silicone sealer to the new threads. Apply more sealer to the 3/8" NPT nipple, elbow and hose barb and secure in hole. Make sure seal is formed all around the fitting. Install elbow and barb fitting pointing up and towards the driver side frame rail. (See *Fig. 3-b.*)

**F.** Temporarily cover oil drain barb fitting to keep out debris.

**G.** Drain the engine oil, install a new filter and refill with fresh oil.

**H.** Re-attach the steering rack and ball joints.

**I.** Re-install the engine cooling fans if they were previously removed.

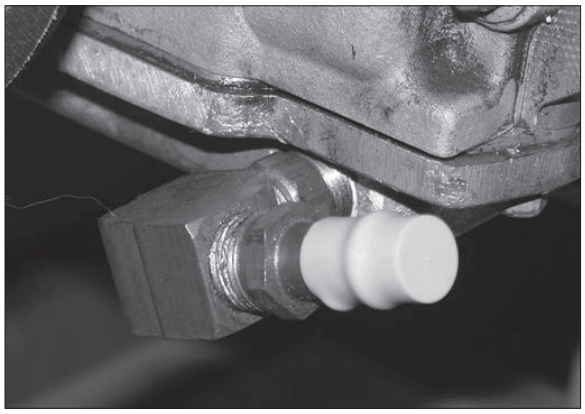

*Fig. 3-b*

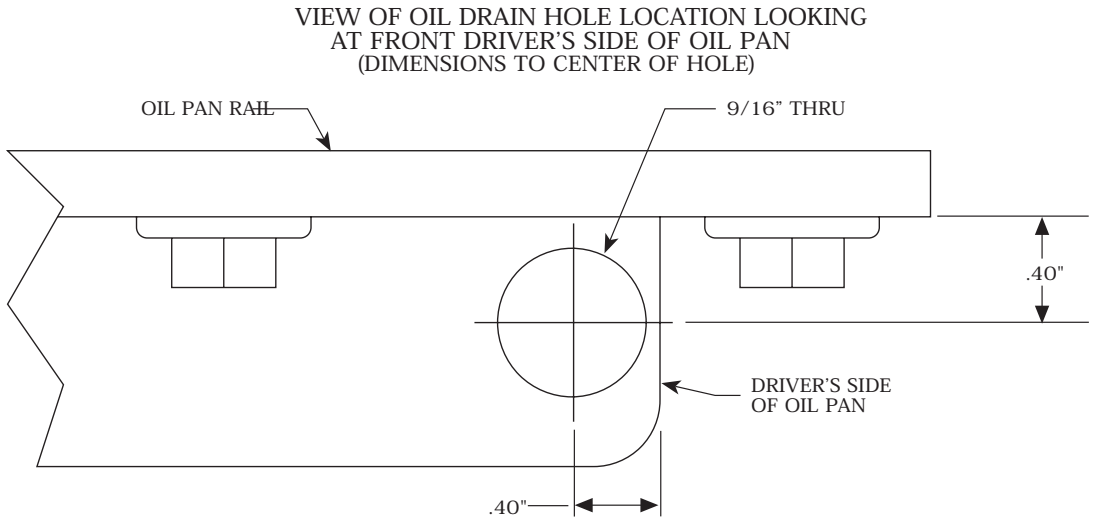


*Fig. 3-c*

## 4. OIL FEED LINE INSTALLATION

**A.** Remove the two bolts holding the small casting located just above the oil filter

**B.** Using engine oil on the threads, install 1/8" NPT to #4 90° fitting into the supplied oil feed adapter.

**C.** Using the adapter, the appropriate supplied gasket and the supplied 6mm screws, assemble the components as shown in *Fig. 4-a*.

**D.** Temporarily cover one end of the oil feed line and protect it from debris until connecting it to the supercharger.

**E.** Connect the open end of oil feed line to the installed fitting. Route line along oil pan rail towards the front of the engine. Use tie wraps to secure the line and protect it from kinking, abrasion, and high heat areas.

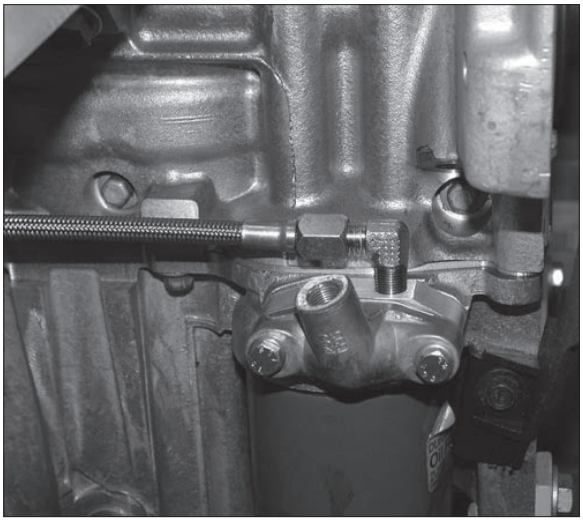

*Fig. 4-a*


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## 5. SURGE TANK RELOCATION

*The factory surge tank will be spaced up about 3/4" in order to clear the new alternator mounting location cap on some vehicles - this may cause hood misalignment. If hood alignment is unacceptable, the surge tank may have to be lowered and clearance to the alternator re-checked.*

**A.** Attach the supplied small metal tab onto the bottom of the engine coolant surge tank using the supplied M6 bolt, nut and washers as shown in *Fig. 5-a*.

**B.** Install the M6 x 50 mm bolt (the bolt is to be installed from the bottom of the fender) and .85" long spacer in the rear hole on the inner fender.

**C.** Install the M6 x 45 mm bolt (the bolt is to be installed from the bottom of the fender) and .7" long spacer in the front hole on the inner fender.

**D.** Use the remaining factory nuts to secure the surge tank at all three of its original mounting locations. (See *Fig. 5-b*.)

**E.** The 3/4" hose connecting the surge tank to the thermostat housing (on the engine's water pump) must be extended to provide clearance for the Vortech Charge Air Cooler (CAC). Remove the hose that connects the coolant reservoir to the thermostat housing and cut off the last bend on the water pump side. Connect the cut end of the remaining U-shaped hose to the surge tank and insert the supplied 3/4" brass hose mender in the open end. Using the supplied 90° hose, connect the short end to the water pump. Cut the long end so that it mates to the hose mender and allows the hose to be tucked next to the frame allowing room for the CAC. (See *Fig. 5-c* for finished modifications.) Secure the hose ends with the two nylon ratchet clamps provided.

**F.** The hose coming out of the water pump and going towards the firewall must be routed on top of the A/C line. Disconnect the end attached to the water pump. Route it on top of the 3/8" aluminum A/C line and re-attach.

**G.** The A/C line must be bent up to clear the hoses coming out of the CAC and then down and towards the passenger side to clear the alternator.

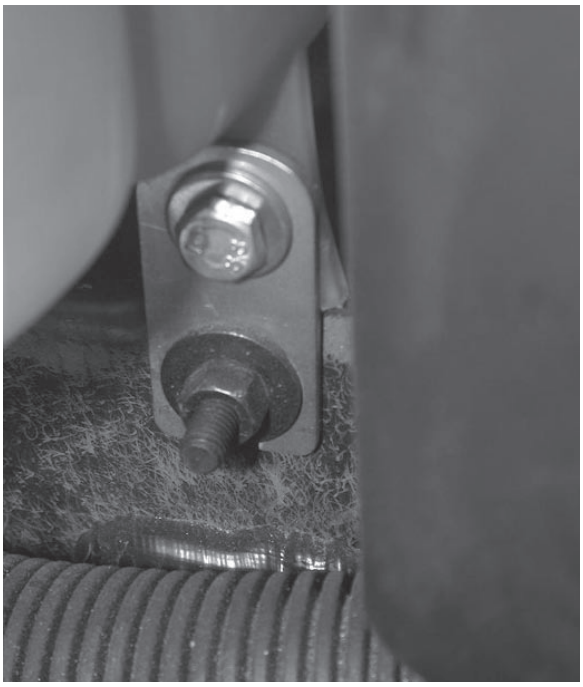

*Fig. 5-a*

*Fig. 5-b*

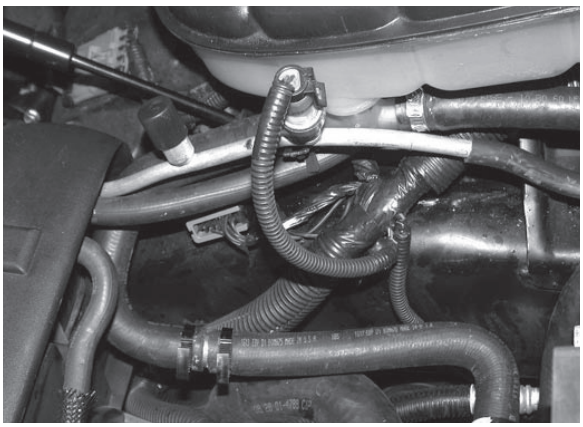

*Fig. 5-c*



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## 6. AUTOMATIC TRANSMISSION COOLING LINE MODIFICATION

### (Vehicles Equipped With Automatic Transmissions Only)

**A.** Disconnect the upper automatic transmission cooler line from the top passenger side of the radiator.

**B.** Cut the hard line off of the radiator side of the transmission line. Leave the amount of hose attached to the transmission line as long as possible.

**C1.** **1997-2000 M.Y. Vehicles:** Install the supplied tube so that it points downward. Connect the rubber hose on the transmission line to the tube and tighten using the supplied hose clamp. (See *Fig. 6-a.*) Skip the following steps and proceed with Section 7.

**C2.** **2001 & Newer Vehicles:** Cut the metal tube so that it protrudes about 3/4" from the fitting that was removed from the radiator. Clean and re-install the fitting into the radiator and use the supplied hose and hose mender to connect it to the transmission hose. Tighten a clamp on each connection. (See *Fig. 6-b.*)

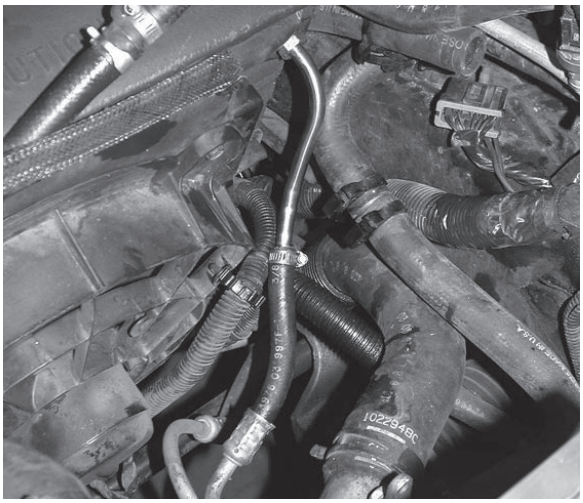

*Fig. 6-a / 1997-2000 M.Y. Vehicles*

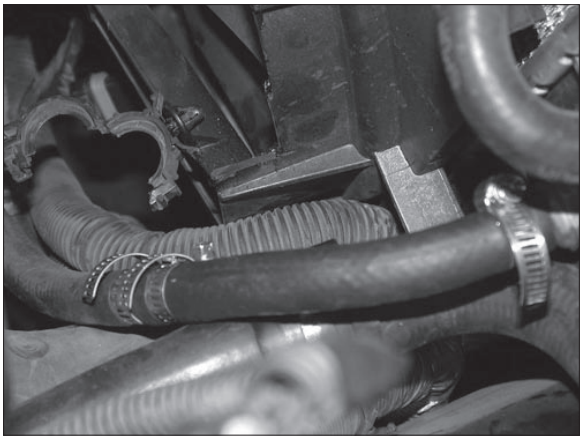

*Fig. 6-b / 2001-2004 M.Y. Vehicles*

## 7. ALTERNATOR RELOCATION

**A.** Using the appropriately sized socket or tube, gently tap the bushings out of the factory alternator mounting bracket and install them into the supplied alternator plate. (See *Fig. 7-a*.)

**B.** Modify the alternator tab (if equipped) as shown in Fig. 7-b.

**C.** Install the large primary alternator plate onto the passenger side head using the three supplied .7" thick spacers and M10 x 45mm bolts with washers. (See *Fig. 7-c*.)

**D.** Cut the factory alternator plug off of the vehicle harness leaving sufficient wire near the plug to install the supplied butt connectors. Splice the supplied wires into the harness making sure that the larger 18 gage wire connects to the correct larger wire in the factory wiring harness. Cut the ring terminal connec-

*Fig. 7-a*


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## 7. ALTERNATOR RELOCATION, cont'd.

tor off of the alternator power wire and use the supplied wire, butt connector and ring terminal connector to extend the factory power wire. Use the supplied heat shrink tubing to protect each connection after crimping. Route the extended wires across the front of the engine (underneath and behind the throttle body) to the new alternator location.

**E.** Install the supplied heat shield over the alternator wires where they will run by the passenger side exhaust manifold. Re-attach the factory alternator plug onto the extended wiring harness and install the supplied wire loom with electrical tape to protect the wires. Re-connect the plug and power wire to the alternator and secure the wires with the supplied tie wraps when the alternator is re-installed. (See *Fig. 7-d*.) Adjust the heat shield over the wires for best heat protection.

**F.** Loosely install the alternator onto the primary mounting plate. Use the factory screw installed through the bushing installed in the secondary plate, through the alternator and into the primary alternator plate. Loosely install the supplied M10 x 65mm screw into the bottom hole on the alternator using a washer. (See *Fig 7-e.*)

**G.** Grind/sand the small raised area off of the back of the spring tensioner until it is flush with the flat area as shown in *Fig. 7-f*. This will later provide clearance between the spring tensioner and the water pump. Using a washer, loosely install the supplied M10 x 65mm screw through the lower spring tensioner mounting hole, through a 1.3" spacer and into the primary mounting plate. (See *Fig. 7-g*.)

**H.** Loosely attach the secondary plate to the primary plate using the two supplied 2" spacers. Use one of the factory alternator mounting bolts and the supplied M10 x 110mm bolt going through the factory pulley dust cover and 6 rib grooved idler (removed from the factory spring tensioner), through the supplied idler spacer, secondary mounting plate and a 2" spacer and into the threaded hole in the primary alternator mounting plate. (See *Fig. 7-g*.)

**I.** Using a washer, loosely install the supplied 85mm screw through the lower bushing in the support plate, through the spring tensioner, through a 1.3" spacer and into the primary mounting plate.

**J.** Install the supplied 3-1/2" smooth idler with

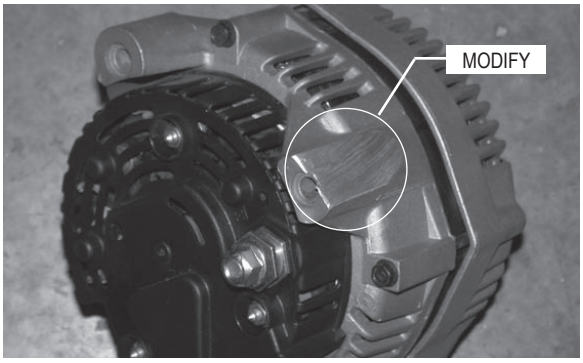


*Fig. 7-b*

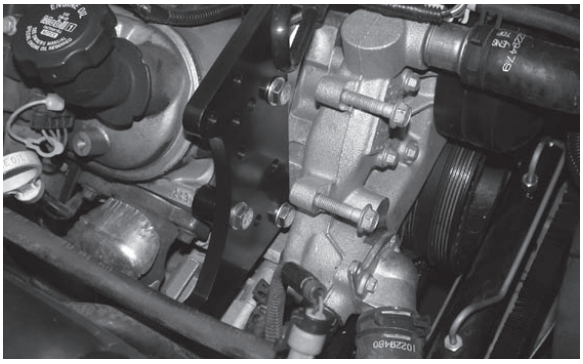

*Fig. 7-c*

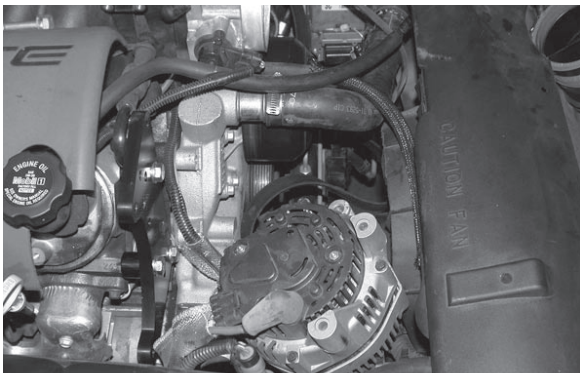


*Fig. 7-d*

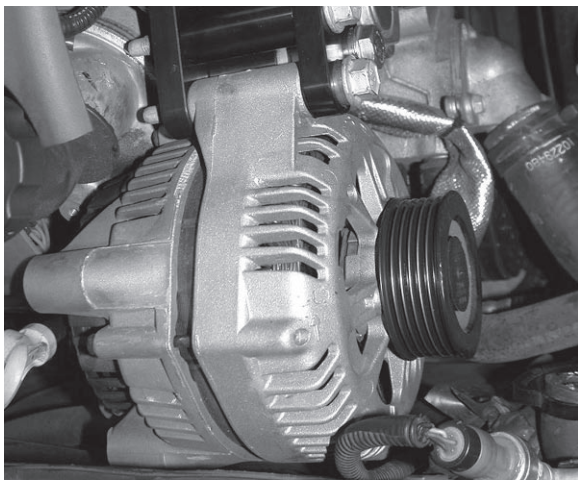

*Fig. 7-e*



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## 7. ALTERNATOR RELOCATION, cont'd

dust shield onto the spring tensioner using the supplied 25mm screw with a washer. Install the spring tensioner onto the alternator plate in the position shown in *Fig. 7-g*.

**K.** Tighten all of the screws.

**L.** Verify that the spring tensioner does not hit the water pump when rotated down. If contact occurs, remove the tensioner and sand additional material off of the back of it until there is minimal clearance.

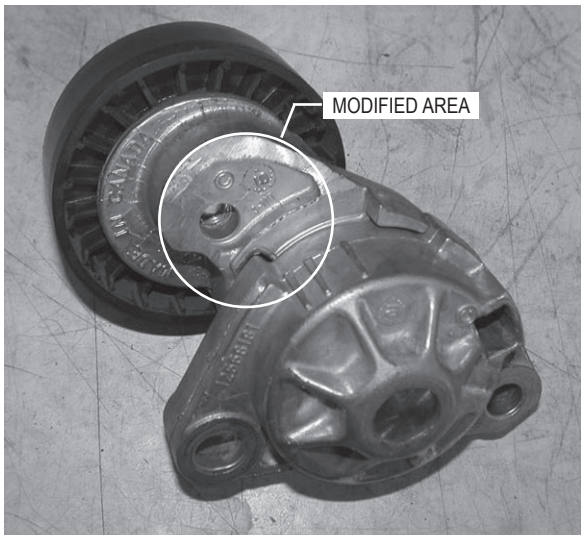


*Fig. 7-f*

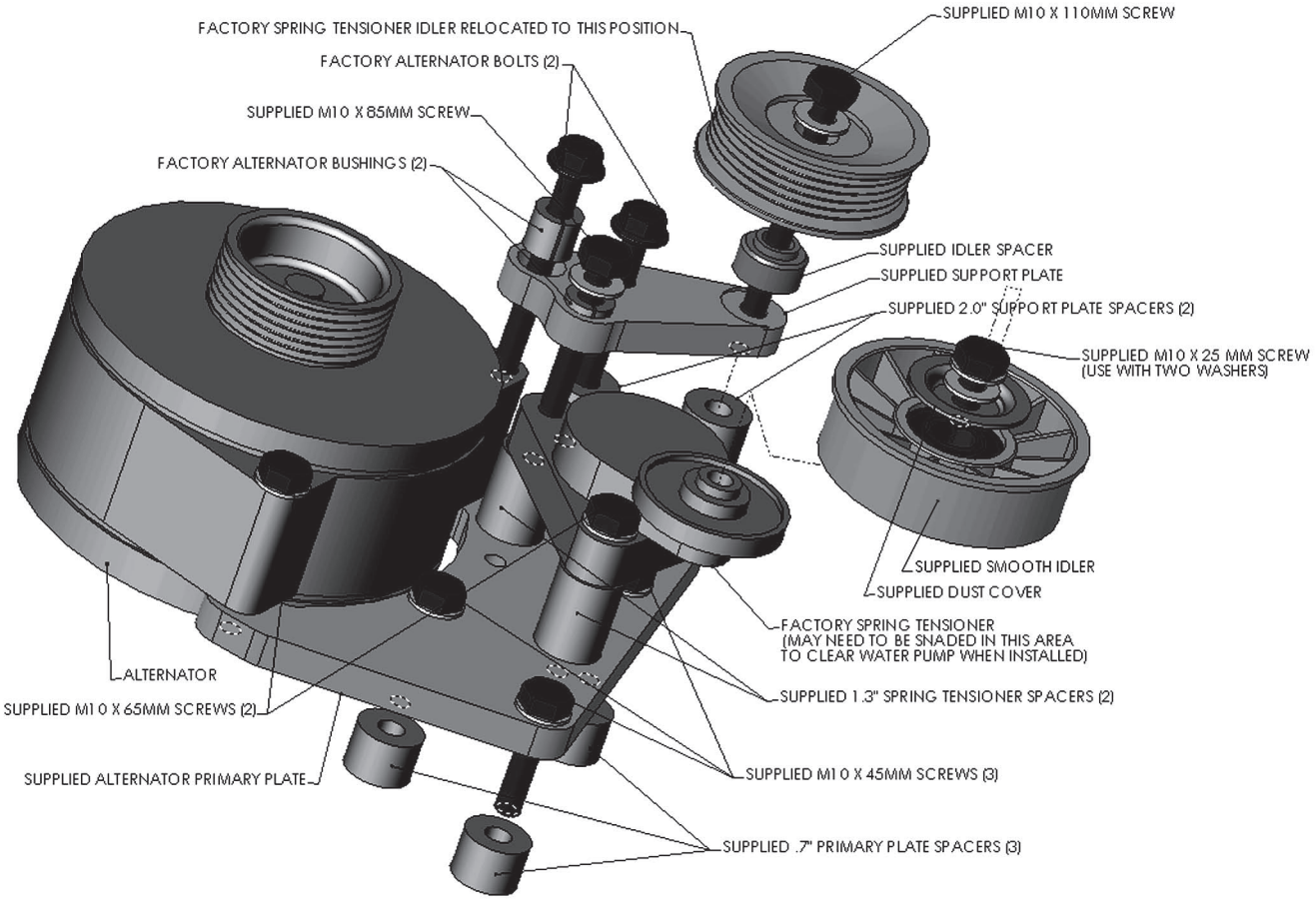
FACTORY SPRING TENSIONER IDLER RELOCATED TO THIS POSITION
FACTORY ALTERNATOR BOLTS (2)
SUPPLIED M10 X 85MM SCREW
FACTORY ALTERNATOR BUSHINGS (2)
SUPPLIED M10 X 110MM SCREW
SUPPLIED IDLER SPACER
SUPPLIED SUPPORT PLATE
SUPPLIED 2.0" SUPPORT PLATE SPACERS (2)
SUPPLIED M10 X 25 MM SCREW (USE WITH TWO WASHERS)
SUPPLIED SMOOTH IDLER
SUPPLIED DUST COVER
FACTORY SPRING TENSIONER (MAY NEED TO BE SNADED IN THIS AREA TO CLEAR WATER PUMP WHEN INSTALLED)
ALTERNATOR
SUPPLIED M10 X 65MM SCREWS (2)
SUPPLIED 1.3" SPRING TENSIONER SPACERS (2)
SUPPLIED ALTERNATOR PRIMARY PLATE
SUPPLIED M10 X 45MM SCREWS (3)
SUPPLIED .7" PRIMARY PLATE SPACERS (3)

*Fig. 7-g*


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## 8. SUPERCHARGER MOUNTING BRACKET INSTALLATION

**NOTE:** *The mounting bracket and power steering pump can be installed in the manner in which the stock mounting bracket was removed. The following steps apply to a 2002 ZO6, which has the ABS module directly in front of the power steering pump. For vehicles with the ABS module mounted elsewhere, it may be easier to leave the power steering pump connected to the power steering hose but loose until after the mounting bracket is installed.*

**A.** Clean the front of the driver side head of debris.

**B.** Slide the supplied M10 x 25mm screw and washer into the mounting bracket hole behind where the power steering pump is to mount. Install the 180° end of the supplied 5/8" molded hose through the two holes in the mounting bracket. Trim the straight section for best fit (See *Fig. 8-a*). Install the supplied #8 hose clamp over hose and install the power steering pump onto the supercharger mounting bracket using the original hardware and support plate. Tighten hose clamp. Gently secure hose away from the pulley using a zip tie routed through the two holes in the mounting bracket. (See *Fig. 8-b.*)

**C.** Install the supplied gilmer (toothed) belt around the pulley on the mounting bracket assembly. The belt can not be installed after the mounting bracket is installed

**D.** Install the supplied 3/8-16 x 2" screws and washers in the middle two supercharger mounting bolt positions. These bolts can't be installed after mounting bracket is installed onto the engine. (See *Fig. 8-b*.)

**E.** Bolt the supercharger mounting bracket to head with previously installed M10 x 25 mm, the supplied M10 x 35 mm and one of the factory power steering pump bracket bolts (Should be about 75 mm long). This is very difficult with the power steering pump installed. Try starting the two upper bolts very loosely so that the mounting bracket is still free to move. Start the 25 mm bolt by hand if possible or with a thin (16 mm) open end wrench.

**NOTE:** *The 3.60" pulley must be removed (if installed) to install the 75mm bolt into the bracket.*

**F.** Make sure that mounting bracket is seated directly on machined surface on head, that no wires are pinched and that the power steering hose is routed in the recessed portion of the mounting bracket. (See *Figs. 8-c, 8-d.*)

**G.** Tighten the three mounting bolts in steps to 37 ft·lb (50 N·m).

**H.** Attach the factory power steering high pressure line to the pump and tighten. Install the power steering pump pulley. Verify that the

*Fig. 8-a*

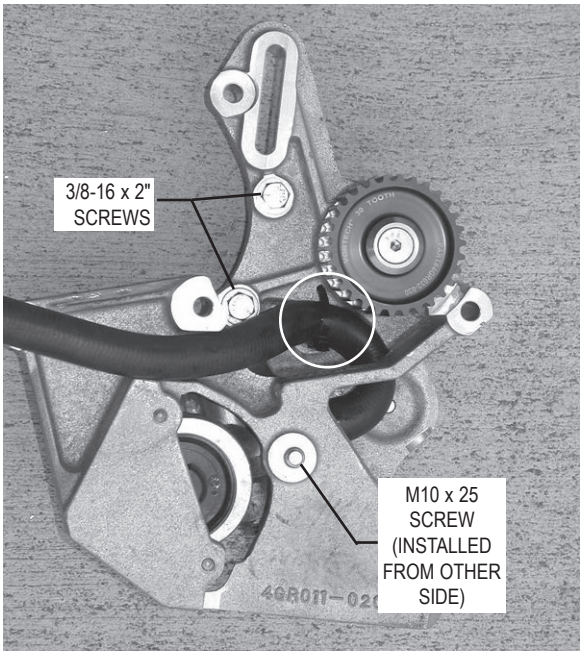


*Fig. 8-b*

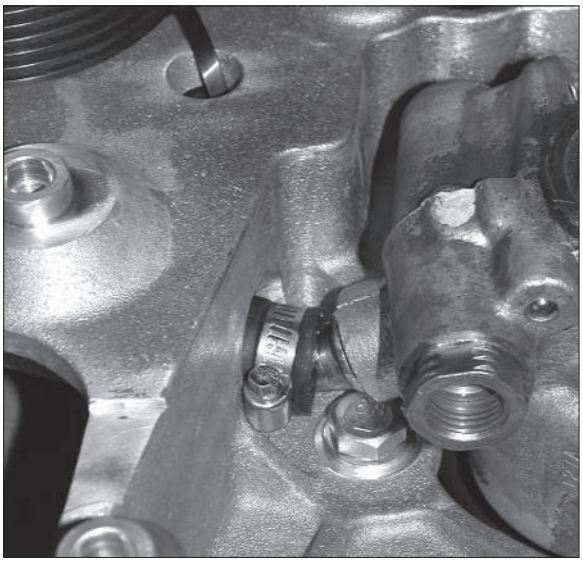

*Fig. 8-c*



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## 8. SUPERCHARGER MOUNTING BRACKET INSTALLATION, cont'd.

hub of the power steering pulley is flush with the end of the power steering pump input shaft.

**I.** Install the supplied flanged plastic idler with dust cover onto the lower idler pilot. Install the factory idler (without rear dust cover) from the stock mounting bracket onto the upper idler pilot. Tighten both idlers using the supplied M10 x 25 mm screws.

**J.** With the supplied 6-rib belt encircling it as shown in *Fig. 8-f*, install the supplied aluminum 6-rib pulley onto the jackshaft on the front of the mounting bracket using the key, retainer, and flathead cap screw (with blue Threadlocker on the bolt threads.)

**K.** Complete the routing of the accessory drive belt as shown in *Fig. 8-f*. Torque the supercharger pulley retaining screw to 30 ft-lbs by grasping the belt on either side of the pulley while tightening.

**L.** Secure the throttle position sensor wires on the passenger side of the throttle body away from possible contact with the accessory drive belt.

**M.** Look closely at the toothed pulley and belt on the back side of the mounting bracket. Rotate the small hose clamp located on the factory coolant bleed hose away from the belt to avoid possible contact.( See *Fig. 8-e*.)

**N.** If necessary, re-install the ABS unit. Re-connect the factory brake lines and harness connector. Bleed the brakes per the factory vehicle service manual. If clearance between the supercharger and ABS unit becomes a problem during supercharger installation, use the supplied 12mm washers to space the ABS pump/bracket assembly forward.

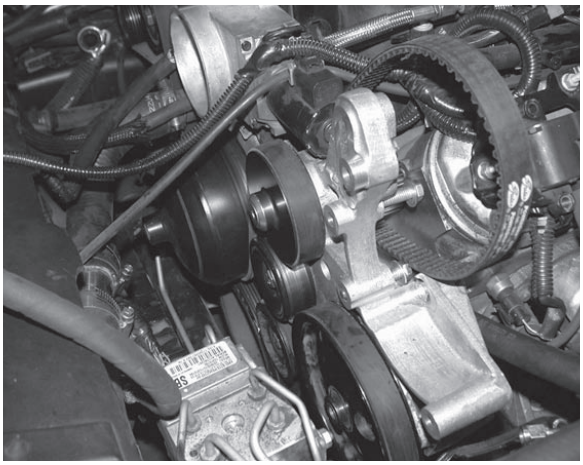

*Fig. 8-d*

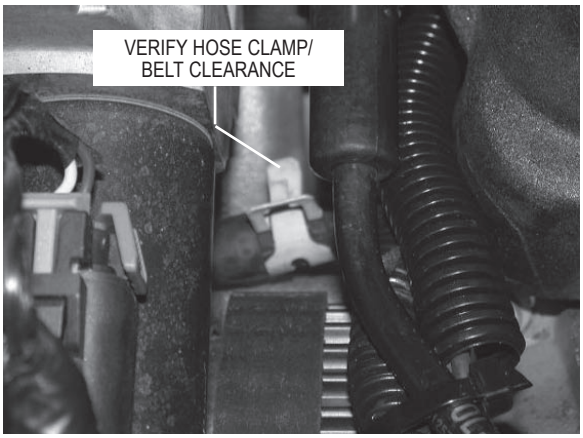


*Fig. 8-e*

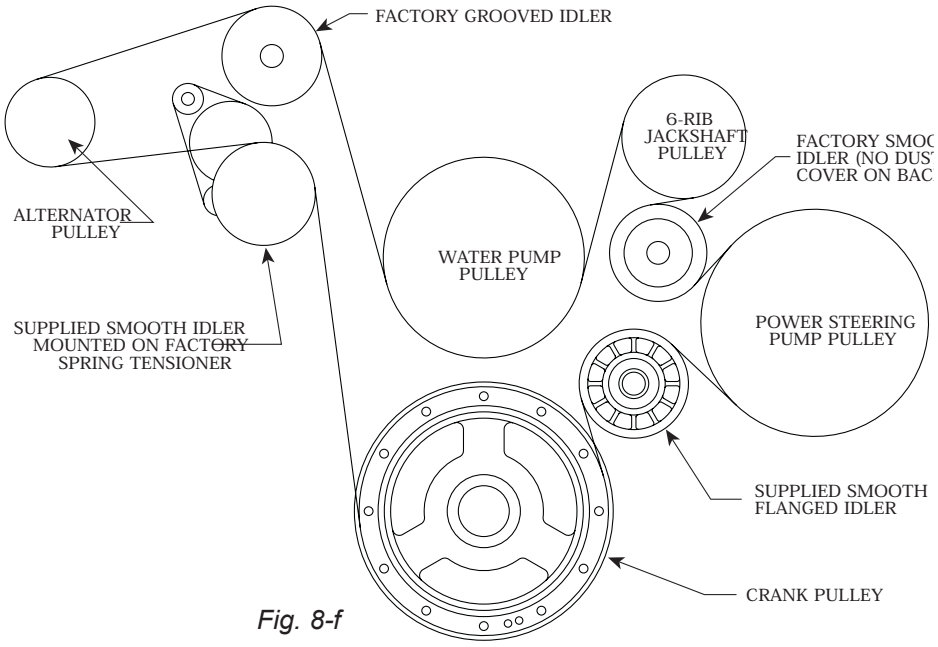


*Fig. 8-f*


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## 9. ABS MODULE RELOCATION

**(1999-2000 Model vehicles only, all others proceed with step 10.)**

> **NOTE:** *The following steps reposition the ABS module upside down so that there will be room for the supercharger. It is very important to spend as much time as necessary to ensure that the brake lines are sound (not kinked or bent repeatedly), routed away from moving parts, and protected from abrasion wherever they touch non-moving parts or each other.*

**A.** Attach the ABS module to the supplied bracket using two of the factory isolator mounts. Attach the ABS module ground wire under one of the nuts.

**B.** Install the supplied grommet into the supplied ABS support strap.

**C.** Install the strap over the remaining pin on the ABS module and bolt it to the ABS bracket using the supplied hardware.

**D.** Use the factory hardware to install the assembly in the original location. Some of the holes are slotted, so before tightening, position the ABS module so that the lowest brake line connector exits immediately above the steering rack. (See *Fig. 9-a*.)

**E.** The brake lines must now be carefully bent by hand to connect out to their original location on the ABS module. Bend each line and loosely attach to the ABS module in the order shown in *Figs. 9-b*.

> **NOTE:** *A properly bent brake line will thread easily into the ABS module. If a line does not thread in easily by hand, it is not lined up properly.* **Do not force it**.

**F.** With all of the lines loosely connected, establish the order in which to tighten them based on the tools available. It may be necessary to disconnect a couple of lines to provide access to the hard to reach locations. (See *Fig. 9-d* for recommended tools.)

> **NOTE:** *When connecting the line to "MCI", the hard line should be rotated where it connects to the braided line to avoid twisting and damaging the braided line. Carefully hold the crimp ferrule with pliers and rotate the hard line by hand to the desired angle.*

**G.** Attach the ABS module plug and verify that the wires are secured away from any moving parts

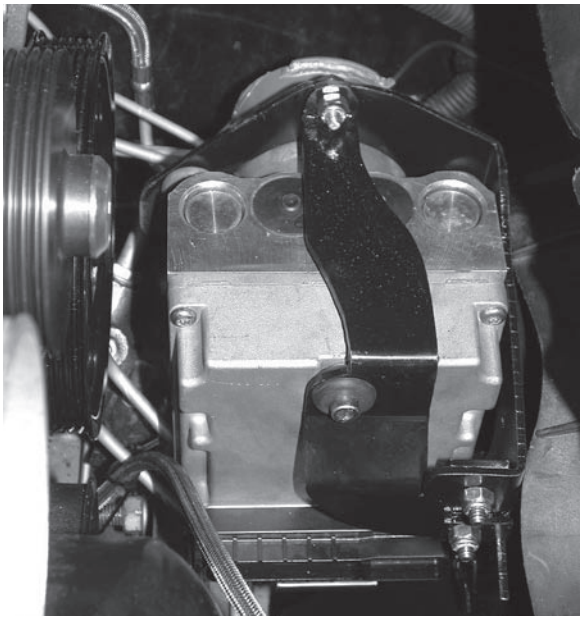

*Fig. 9-a*

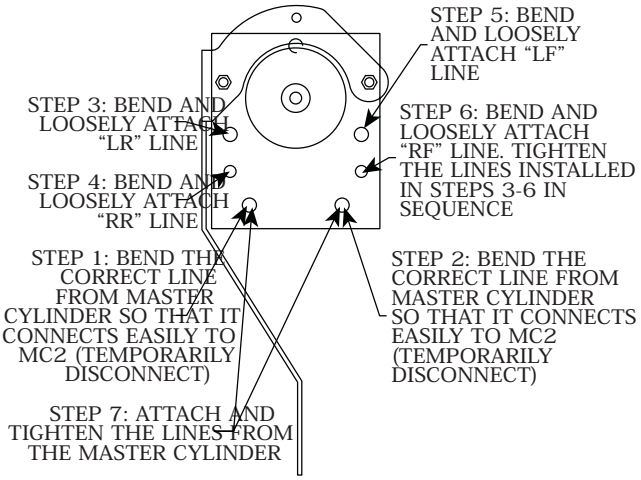
STEP 5: BEND AND LOOSELY ATTACH "LF" LINE
STEP 3: BEND AND LOOSELY ATTACH "LR" LINE
STEP 6: BEND AND LOOSELY ATTACH "RF" LINE. TIGHTEN THE LINES INSTALLED IN STEPS 3-6 IN SEQUENCE
STEP 4: BEND AND LOOSELY ATTACH "RR" LINE
STEP 1: BEND THE CORRECT LINE FROM MASTER CYLINDER SO THAT IT CONNECTS EASILY TO MC2 (TEMPORARILY DISCONNECT)
STEP 2: BEND THE CORRECT LINE FROM MASTER CYLINDER SO THAT IT CONNECTS EASILY TO MC2 (TEMPORARILY DISCONNECT)
STEP 7: ATTACH AND TIGHTEN THE LINES FROM THE MASTER CYLINDER

*Fig. 9-b*

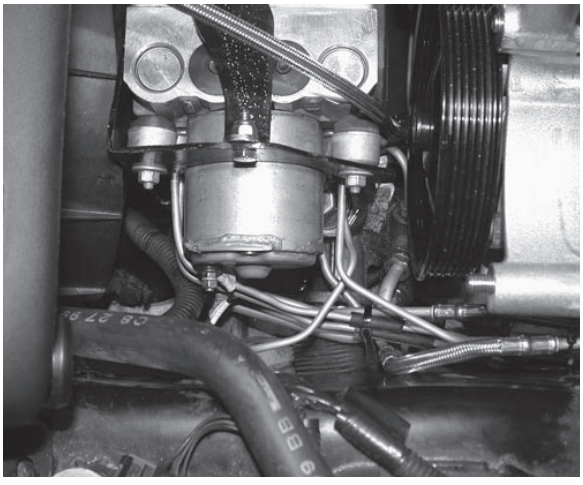

*Fig. 9-c*

*Fig. 9-d*



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## 10. RADIATOR HOSE MODIFICATION

**A.** The object of this section is to route the radiator hose as close to the radiator as possible to provide room for the supercharger components.

**B.** Trim the supplied hose so that it turns down as quickly as possible when connected to the radiator with factory clamp. Install the new hose onto the radiator. (See *Fig 10-a.*)

**C.** Cut the original radiator hose and the newly installed radiator hose so that they will connect with the supplied 1-3/8" hose mender. Make sure hose is routed next to the radiator shroud behind the ABS. Clamp the hoses onto the supplied hose mender using the supplied #20 clamps. Use a piece of scrap hose to insulate the radiator hose from sharp objects etc. (See *Fig. 10-b.*)

**D.** Tighten/install hose clamps on each hose connection and refill the coolant system.

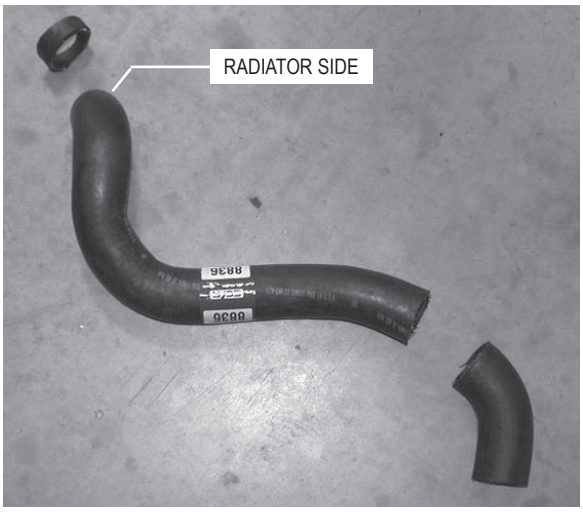


*Fig. 10-a*

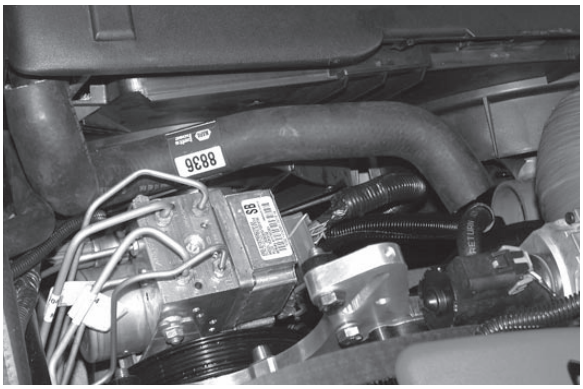

*Fig. 10-b*

## 11. POWER STEERING RESERVOIR INSTALLATION

**A1.** (2002 Z06, others similar) Remove the two screws securing the driver side front coil. Install two of the supplied 6 mm washers as spacers onto the forward most stud on the valve cover. Install the supplied power steering reservoir bracket between the coil and its bracket and re-install the factory coil retaining screws. Install the supplied washer and nut onto the stud and tighten all fasteners. (See *Fig 11-a.*)

**A2.** (1997 C5, others similar) Install the power steering bracket onto the first and second coils using the factory retaining screws. (See *Fig. 11-b*.)

**B.** Cut about 1" off each end of stock power steering return hose (See *Fig 11-c*), install on reservoir and use the supplied 5/8" hose-mender to connect to the previously installed pump supply hose (cut end of supplied hose until there is just enough straight to connect hose mender).

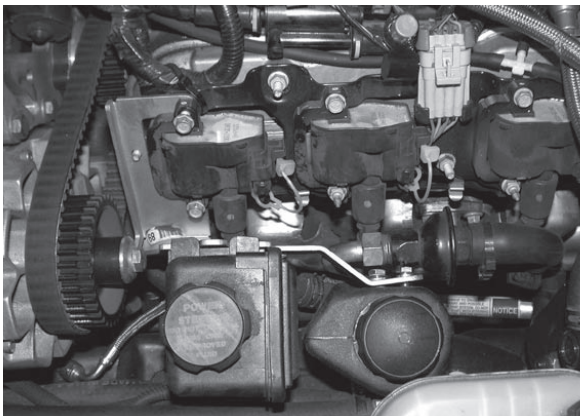

*Fig. 11-a*
*(2000-2003 Corvette, others similar)*


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## 11. POWER STEERING RESERVOIR INSTALLATION, cont'd.

**C.** Use factory clamps on each end of the hose mender and supplied clamps on pump (already completed) and reservoir.

**D.** Use the supplied 3/8" hose mender, hose, and #6 clamps to lengthen the reservoir return line (from the power steering cooler). Route the lengthened hose against the fan shroud and along the driver's side frame rail to the power steering reservoir. Attach the hose to the reservoir.

**E.** Verify that all hose connections are secured by clamps and install reservoir into the slots in the installed bracket.

**F.** Bleed system as follows:

**1.** Raise front wheels off ground.

**2.** Turn steering wheel full left.

**3.** Fill reservoir to "full cold" level. Maintain level throughout procedure.

**4.** Turn steering wheel lock to lock at least 20 times or until bubbles stop.

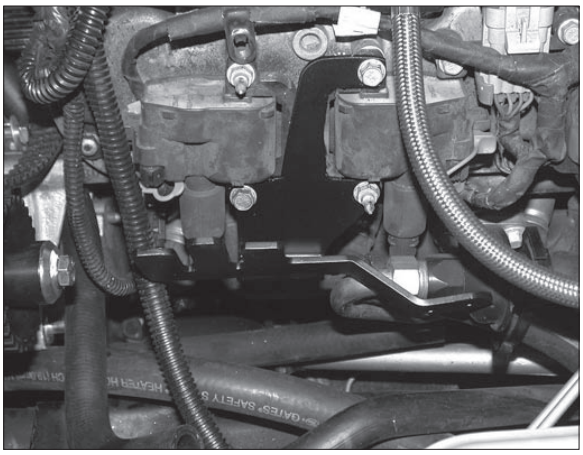

*Fig. 11-b*
*(1997 Corvette, others similar)*

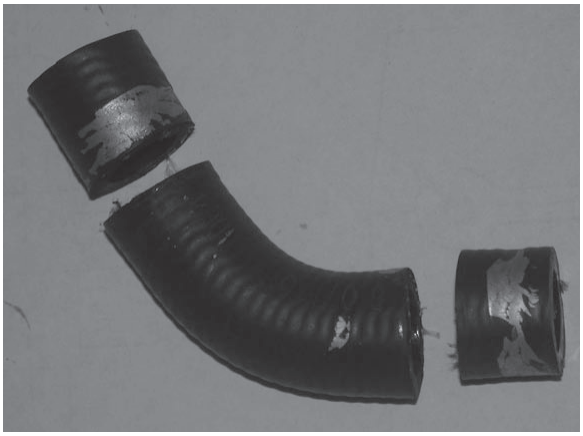

*Fig. 11-c*

## 12. FUEL INJECTOR REPLACEMENT

**A.** Relieve the fuel system pressure

**B.** Disconnect the eight fuel injector plugs and retaining clips from the injectors.

> **NOTE:** *Do not reinstall the factory injector retaining clips onto the new injectors.*

**C.** Remove the four screws that hold down the fuel rail on the intake manifold. Lift up on the rails evenly and remove all eight injectors.

**D.** Using a small amount of clean motor oil, lightly lubricate the O-rings on both ends of the Vortech supplied fuel injectors.

**E.** Install the new injectors into the fuel rails with the terminals facing outward.

**F.** Carefully lower the fuel rail/injector assembly down onto the intake manifold. Check to see that each injector has been seated properly into the intake manifold.

**G.** Tighten down the fuel rail assembly with the original bolts and attach the injector plugs to the injectors.



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## 13. CHARGE AIR COOLER INSTALLATION

**A.** Reservoir and water pump assembly and installation

**1.** Attach the water pump to the water reservoir using the supplied adel clamp and screw in the position shown in *Fig. 13-a*.

**2.** Cut off the electrical plug on the water pump leaving as much wire connected to the pump as possible. Install the supplied 1/4" eyelet on the water pump ground wire (brown wire). Install a male slide connector onto the water pump positive wire (green wire).

**3.** Using thread sealant, install the 1/2" NPT 90° hose barb fittings into the bottom and top of the supplied plastic reservoir.

**4.** Connect the pump inlet to the bottom reservoir fitting with the supplied 90° hose. Secure hose with clamps on both ends

**5.** From underneath the vehicle, remove the screws securing the splash shield from behind the driver side front wheel.

**6.** Insert the water reservoir into the supplied bracket and insert into the area behind the driver side front wheel next to the frame rail.

**7.** Orient the assembly for best clearance, mark mounting bracket location and remove.

**8.** Using the mounting bracket as a template, hold it in its previous position and mark and drill three holes for the supplied #12 sheet metal screws.

**9.** Secure the bracket to the frame rail using the previously drilled holes and sheet metal screws.

**10.** Lower the reservoir assembly into the bracket and secure using the three supplied 1/4-20 x 1/2" socket head cap screws. Make sure that the water pump ground wire is attached to one of the 1/4-20 screws. (See *Fig 13-b.*)

**11.** From the engine compartment, route the supplied 3/4" hose to the water pump outlet. Secure using the supplied plastic clamps.

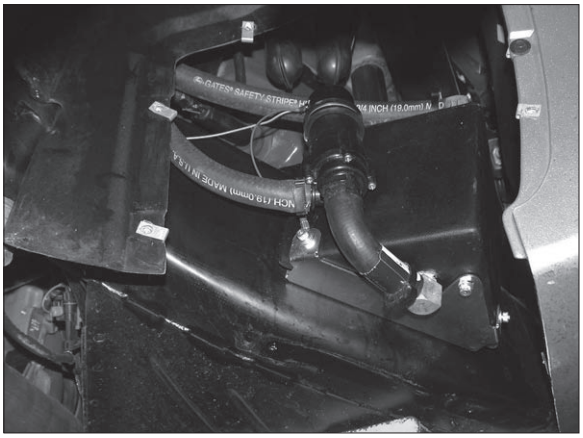

*Fig. 13-a*

*Fig. 13-b*

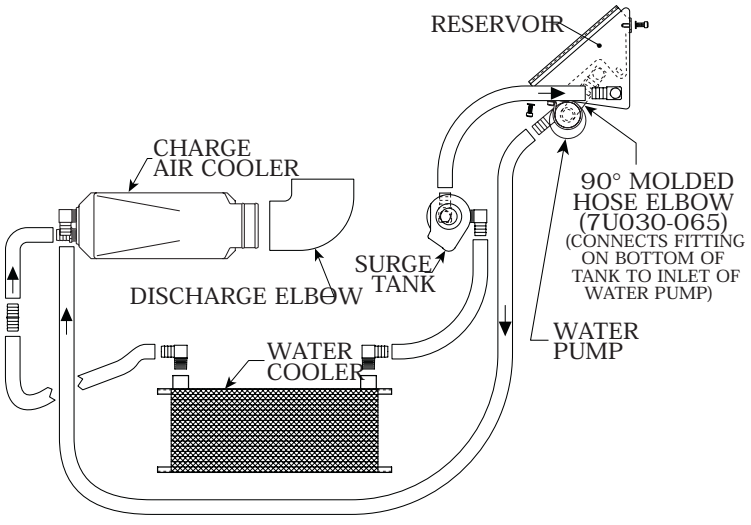
RESERVOIR
CHARGE AIR COOLER
90° MOLDED HOSE ELBOW (7U030-065) (CONNECTS FITTING ON BOTTOM OF TANK TO INLET OF WATER PUMP)
SURGE TANK
DISCHARGE ELBOW
WATER PUMP
WATER COOLER

*Fig. 13-c*


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## 13. CHARGE AIR COOLER INSTALLATION, cont'd

**12.** Connect the supplied long red wire to the water pump power wire using a female slide connector. Route the water pump power wire up to and across the cowl below the windshield and secure using zip ties

**B.** Water pump wiring

**1.** Drill out the relay mounting hole to 1/4" and mount the supplied relay using the forward most screw on the passenger side hood latch. (See *Fig 13-d.*)

**2.** Connect the water pump power wire up to the relay terminal #87.

**3.** Using the supplied ring terminal connector, run the relay ground wire from terminal #86 down to the ground terminal located on top of the vehicle frame below the battery.

**4.** Connect the supplied fuse holder from the #30 relay terminal to the remote (+) positive battery terminal on the fuse box using a female slide connector and a large ring terminal connector.

**5.** Using the yellow wire, connect relay terminal #85 to the factory fuel pump relay terminal #87 in the fuse box using the supplied mini fuse tap and slide connector. (See *Figs 13-e, 13-f, 13-g.*)

**C.** Surge tank install

**1.** The surge tank will be installed just behind the power steering reservoir on the same bracket.

**2.** Connect a length of the supplied hose to the 90° fitting installed in the bottom of the supplied surge tank and point towards the rear of the vehicle. Install and tighten a plastic clamp.

**3.** Install another 90 degree fitting into the surge tank opposite the two 1/4-20 mounting inserts. Point this fitting towards the front of the vehicle. Attach the supplied hose to this fitting with a clamp.

**4.** Install the surge tank onto the bracket using the supplied 1/4-20 screws. The bracket may need to be loosened from the head in order to install the surge tank. (See *Fig. 11-a*.)

**5.** Route the hose attached to the bottom of the surge tank to the 90° fitting installed in the top of the reservoir. Secure with a clamp.

**6.** Re-install the vehicle splash guard.

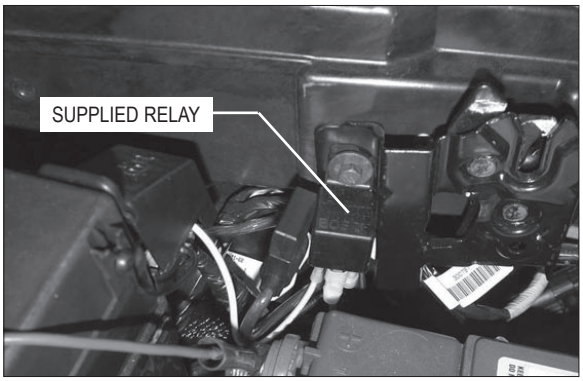


*Fig. 13-d*

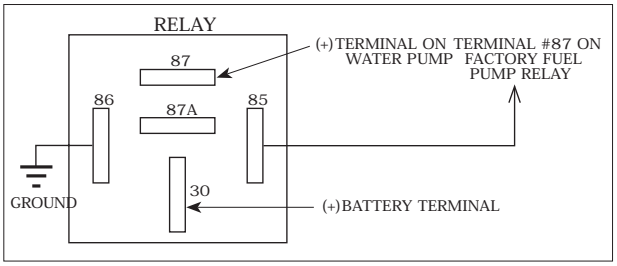


*Fig. 13-e*

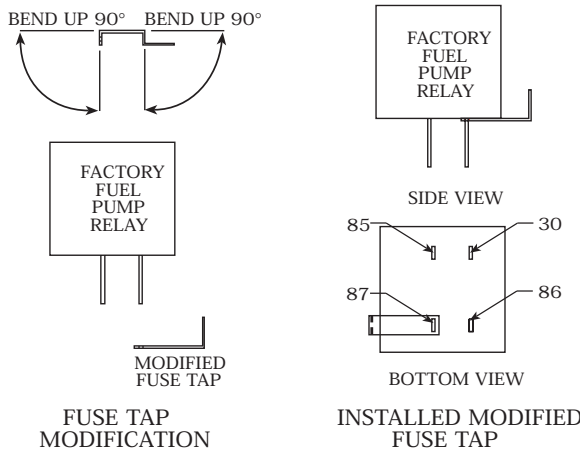


*Fig. 13-f*

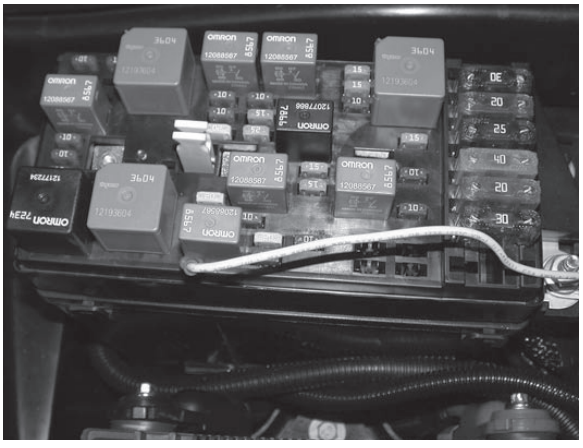

*Fig. 13-g*



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## 13. CHARGE AIR COOLER INSTALLATION, cont'd

**D.** Charge air cooler radiator install

**1.** Install the supplied cooler radiator, with no fittings installed, in the radiator opening (just behind the spring base pins). Position so that it is roughly perpendicular to the adjacent panels. (See *Figs. 13-i, 13-j*.)

**2.** Mark the position of the radiator water inlet and outlet ports onto the upper plastic panel. Also mark the location of one of the 1/4" slots on each side of the cooler radiator onto the lower air dam.

**3.** Remove the radiator. Using a 1 1/8" hole saw, drill through each of the positions marked for the cooler radiator inlet and outlet. Drill a 1/4" hole at each of the marked mounting hole locations through the air dam.

**4.** Install radiator by pushing the inlet and outlet through the upper panel and installing the supplied 1/4" hardware through the air dam and tightening. (See *Fig 13-i.*)

**5.** Temporarily remove the air box from above the vehicle.

**6.** Install two 90° fittings into the cooler radiator using sealant. Point them away from each other.

**7.** Connect the hose from the side of the surge tank to the driver side fitting installed in the cooler radiator. Tighten clamp.

**E.** Charge air cooler (CAC) install

**1.** Install one of the supplied 1/2"NPT x 3/4" x 90° fittings into upper hole in the cooler end tank. The "upper hole" is the 1/2" NPT hole that is on the same side as the 3" air duct (opposite of the 2.75" air duct). Install a 1/2"NPT x 3/4" x 90° straight fitting into the lower hole in the cooler end tank. (See *Fig. 13-k.*)

**2.** Loosely attach the blue silicone rubber reducer elbow to the CAC outlet (3" O.D.).

**3.** Trim 1-3/4" from the short leg.of the supplied 3/4" x 90° rubber elbow. Attach the short leg of the molded 90° hose to the straight fitting installed in the cooler end tank. Secure with a clamp.

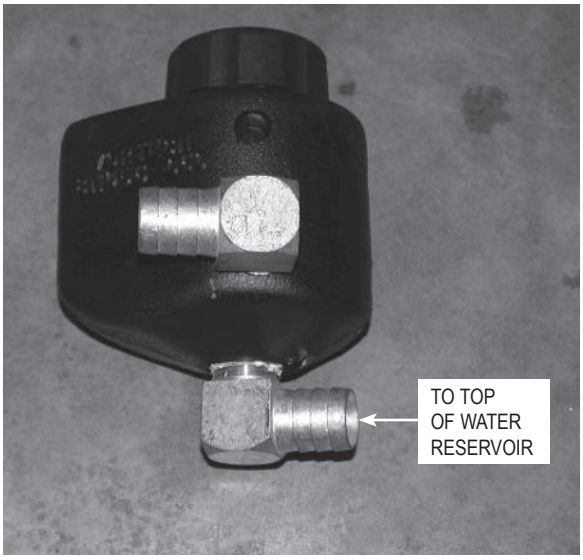


*Fig. 13-h*

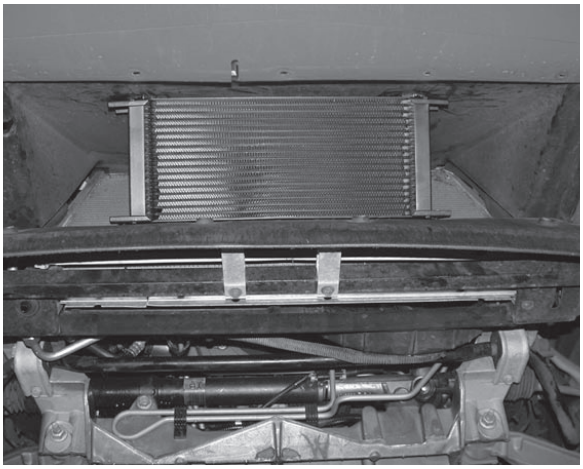

*Fig. 13-i*

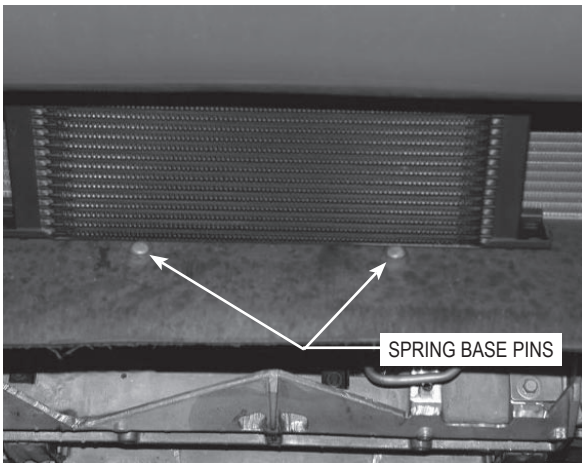


*Fig. 13-j*


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## 13. CHARGE AIR COOLER INSTALLATION, cont'd

**4.** Temporarily disconnect the small radiator bleed hose from the radiator. (See *Fig 13-l.*) Loosen the nut securing the factory harness plug to the front passenger's side frame rail. Rotate the plug toward the outside of the vehicle for cooler clearance. Tighten the nut. (See *Fig. 13-m*.)

> **NOTE:** *If there is insufficient space for the CAC (all automatic cars with clutched alternator pulleys), trim the upper edge of the radiator fan shroud. Make sure not to contact the radiator fan while cutting. (See Fig. 13-n.) Vehicles equipped with a clutched alternator pulley will require the maximum amount of clearance possible.*

**5.** Install the cooler in the vehicle and attach the rubber elbow loosely to the throttle body. (See *Fig 13-n*)

**6.** Connect the hose running from the CAC water pump discharge to the 90° fitting installed in the cooler end tank.

**7.** Using the supplied 3/4" hose mender and straight hose, connect the molded 90° hose, coming from the CAC, to the remaining fitting on the cooler radiator. (See *Figs. 13-c, 13-k*.)

**8.** Verify that all hose connections have tightened clamps installed.

**9.** Remove cap from surge tank and slowly fill system with 25%/75% coolant/water mix.

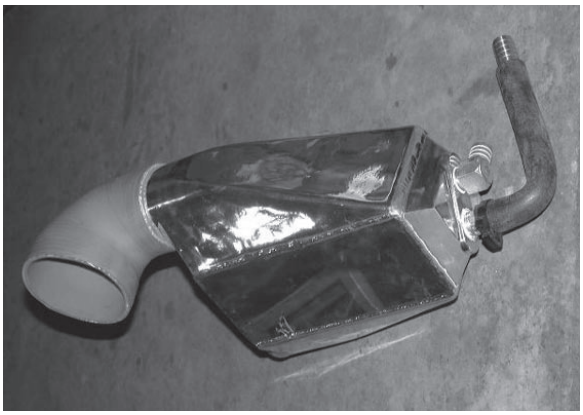

*Fig. 13-k*

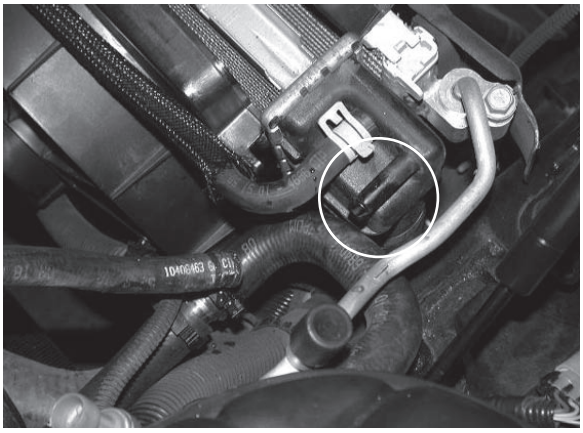

*Fig. 13-l*

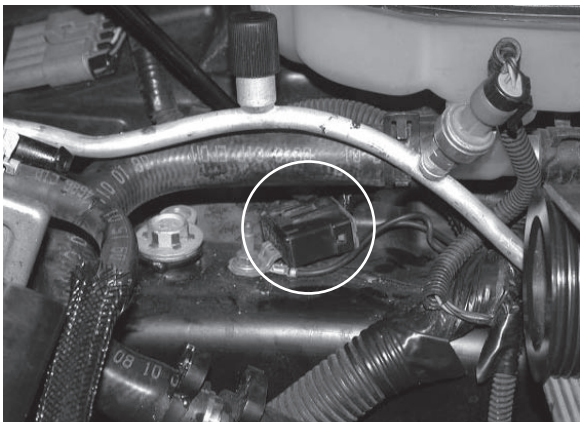

*Fig. 13-m*

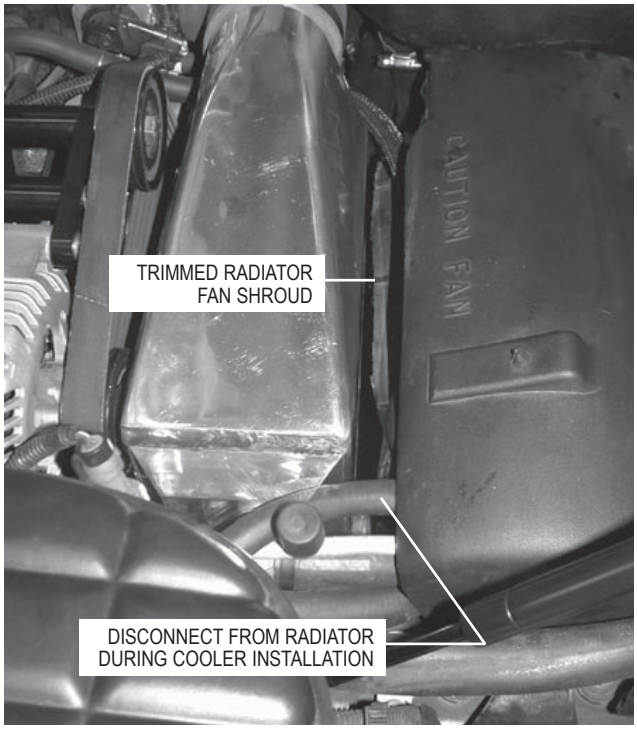


*Fig. 13-n*



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## 14. SUPERCHARGER INSTALLATION

**A.** Install the supplied T-bolt clamp onto the aluminum supercharger inlet duct oriented so as to be accessible after the supercharger is installed. Slide the inlet duct onto the supercharger so that the cast contour lines up with the discharge section of the volute. (See *Fig. 14-a*.)

> **NOTE:** *If inlet duct does not slide onto volute easily, verify that there are no burrs on its inside diameter and then heat up the duct to ease assembly.*

**B.** Install the 1/8 NPT x -4 x 90° fitting into the supercharger oil feed nozzle. (See *Fig. 14-b*.)

**C.** Attach the oil drain hose to supercharger using stepless clamp pliers and tighten the clamp making sure that it is oriented so that it will have maximum clearance to the power steering pump pulley after the supercharger is installed. (See *Fig. 14-b*.)

**D.** Install a 2-3/4" sleeve onto the supercharger discharge. Loosely attach the discharge tube to the charge air cooler. The end of the tube with the 1" bung must be nearer to the charge cooler when installed. (See *Fig. 14-c*.)

**E.** Install supercharger loosely with the oil drain hose routed between the power steering pulley and the frame rail. Start all four supercharger mounting screws (3/8-16 x 1.75", 3/8-16 x 3.00" and previously installed 2" screws) and tighten.

> **NOTE:** *If the vehicle is equipped with ABS, verify that the supercharger volute does not contact the module. If contact will occur, sand the ABS module and/or mounting bolt until there is minimal clearance.*

**F.** Trim as necessary and attach the supercharger oil drain hose to oil pan. Tighten hose clamp.

> **NOTE:** *The oil drain hose* **MUST** *maintain a "downhill" routing always. "Uphill" routing , Dips, kinks or restrictions in the drain hose may cause supercharger seal failure.*

**G.** Route oil feed hose to supercharger and attach.

**H.** Secure both the oil drain, oil feed and power steering hoses from moving components (steering shaft) and high heat areas (exhaust

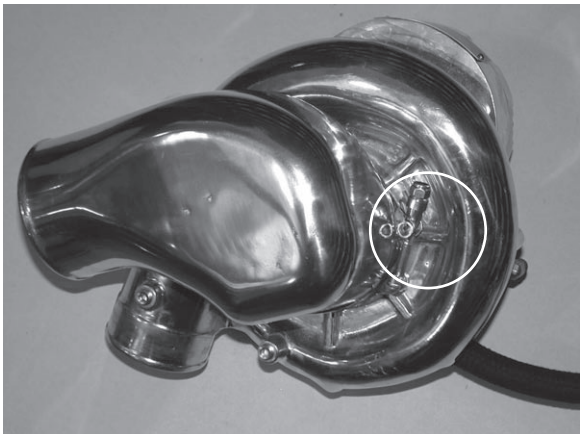

*Fig. 14-a*

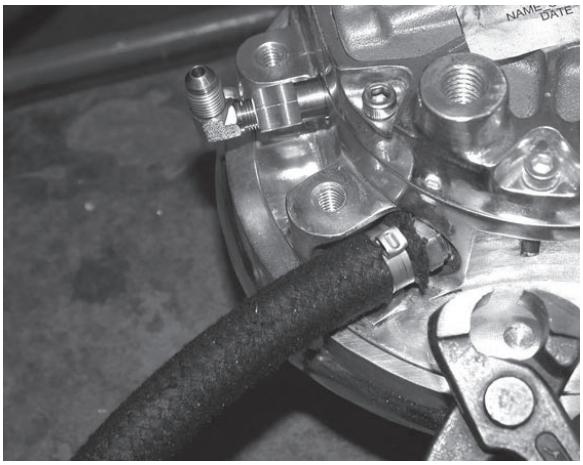

*Fig. 14-b*

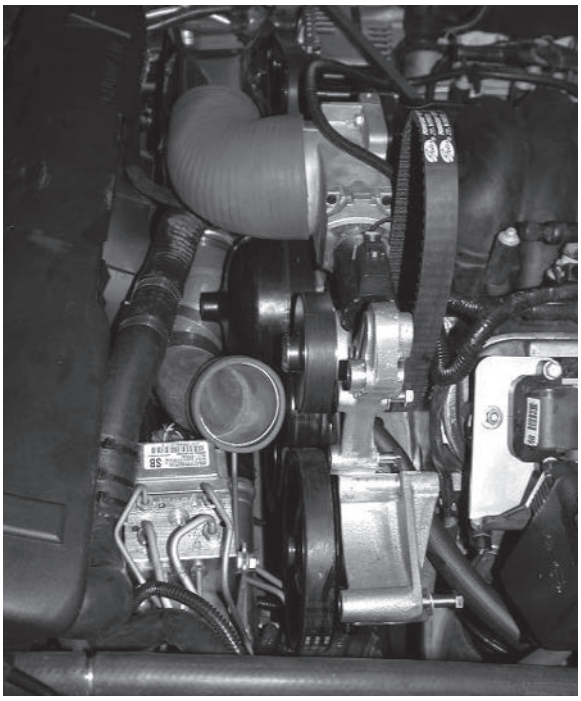

*Fig. 14-c*


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## 14. SUPERCHARGER INSTALLATION, cont'd.

manifold) with the supplied tie wraps.

**I.** Route the toothed belt around the supercharger pulley.

**J.** Install the supplied 3/8-16 x 3.25" idler bolt through two washers, the flanged aluminum idler and the idler spacer and into the slot in the top of the supercharger mounting bracket. (The bearing retainer snap ring on the idler must be pointing toward the idler spacer.) Install the supplied nut and washer on the bolt and tighten until the idler slides up and down with no play.

**K.** Press down on the idler until the belt is snug with minimal free play. It is not necessary to have the belt tight. Once the vehicle has been started, as long as the belt does not move around excessively the belt is tight enough.

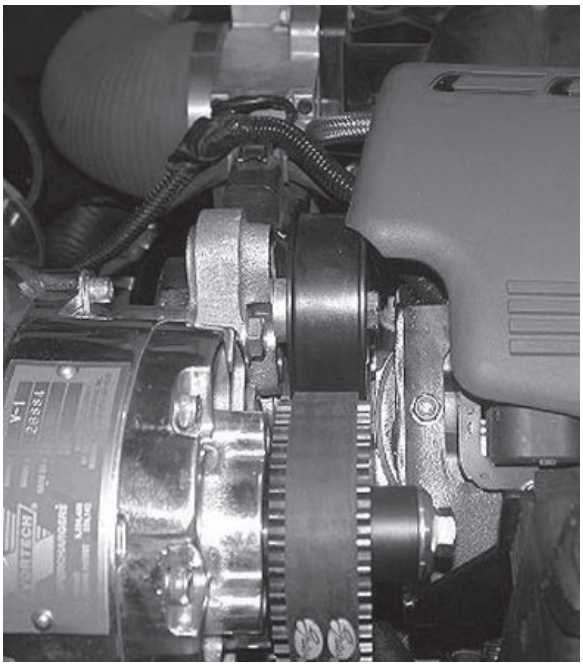

*Fig. 14-d*



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## 15. SUPERCHARGER BYPASS VALVE INSTALLATION

**A.** Connect the supplied 3-1/2" length of Ø1" hose from the barb on the supercharger discharge duct to the inlet of the bypass valve. (See *Fig. 14-a*.)

**B.** Attach the short leg of the molded 1" x 90° hose to the bypass valve discharge and point it up to where it will attach to the plastic air inlet duct.

**C.** Tighten the hose clamps on each connection.

**D.** Cut brake booster vacuum hose as shown (see *Fig. 14-b*) and insert the supplied plastic TEE fitting.

**E.** Connect 5/32" vacuum line from the bypass valve to the installed TEE fitting.

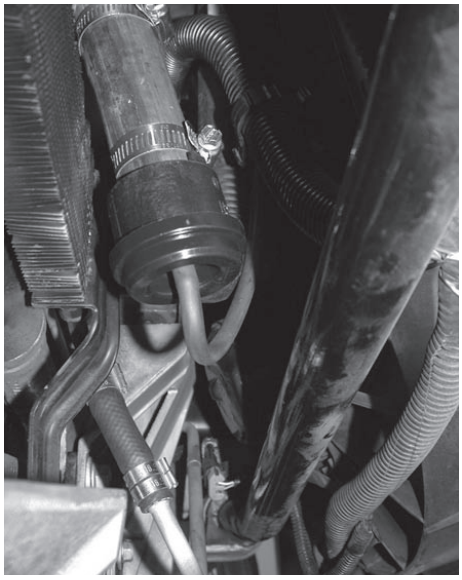

*Fig. 14-a*

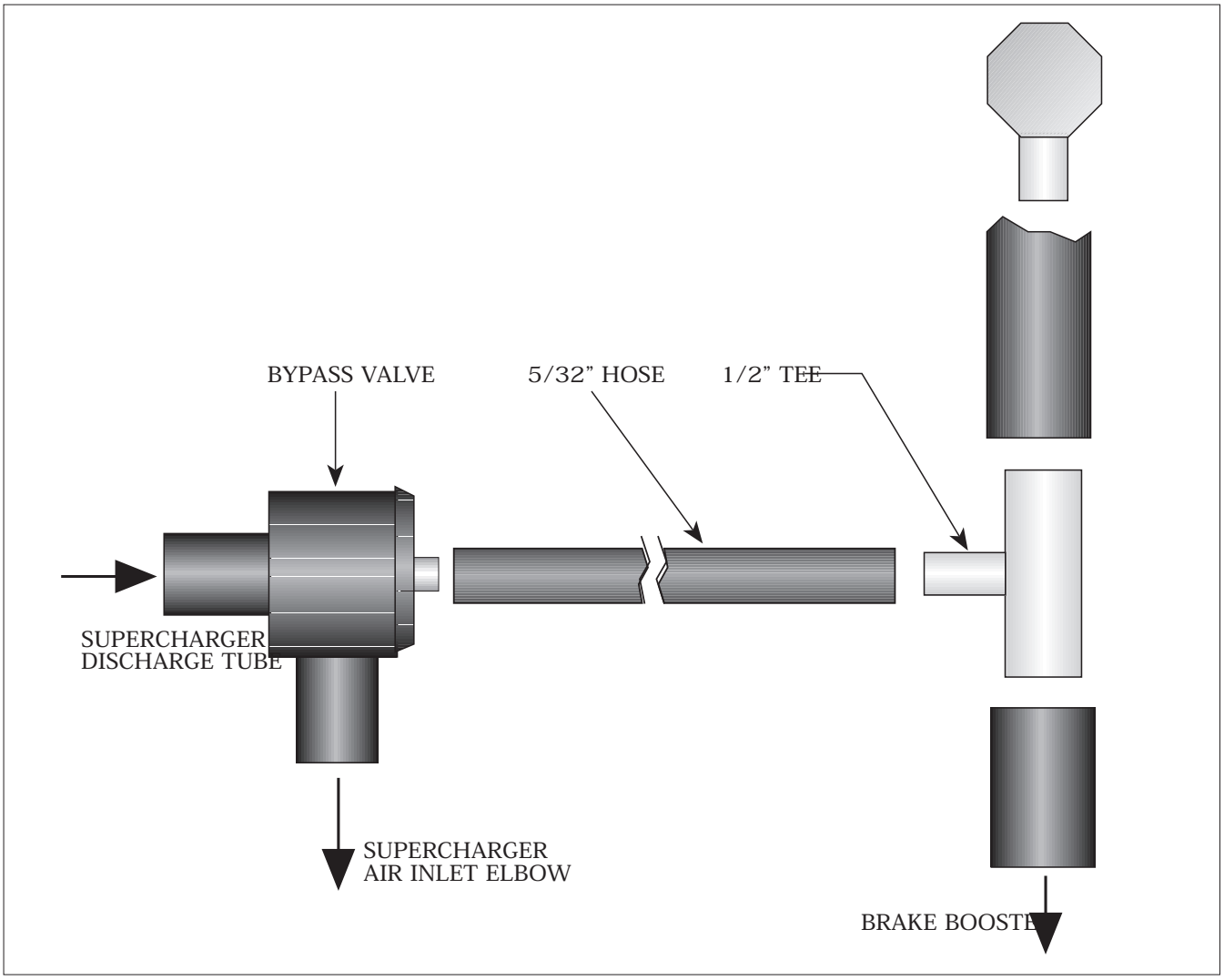


*Fig. 14-b*

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## 16. INLET DUCT INSTALLATION

**A.** Install the supplied grommet and 3/8" elbow in inlet duct hole (if not already completed).

**B.** If the vehicle is equipped with a separate air temperature sensor, drill an 11/16" hole in the plastic inlet duct and install the air temperature sensor and grommet in the hole. (See *Fig. 16-a*.)

> **NOTE:** *The air temperature sensor should be installed up stream of the valve cover breather. Verify that the air temperature sensor wires will reach the new location and that there will be room for the sensor after the inlet duct is installed.*

**C.** If the vehicle has a plastic line running from the fuel regulator (located on top of the engine, connected to the fuel rail), remove the plastic fitting and rubber hose from the end of the plastic line that was previously connected to the factory air duct to throttle body sleeve. Drill a 5/16" hole in the supplied plastic duct, insert a short length of 3/16" hose, insert the plastic fitting into the hose and run the supplied 3/16" hose from the fitting to the plastic fuel regulator line after the inlet duct is installed.

**D.** Stretch the supplied 3" wide x 3-1/2" sleeve and #56 clamps onto the Mass Air Flow sensor. Attach the inlet duct to the MAF and to the previously installed bypass valve hose.

**E.** Connect supplied 3/8 hose from the elbow installed in the plastic inlet duct to the passenger side valve cover breather hose using the supplied 3/8" hose and hose mender.

**F.** Install the supplied flex hose and #52 clamps from the plastic air inlet duct to the aluminum supercharger inlet duct.

**G.** Tighten the clamps on each connection. Tighten the T-bolt clamp until the supercharger inlet is tight.

*Fig. 16-a*

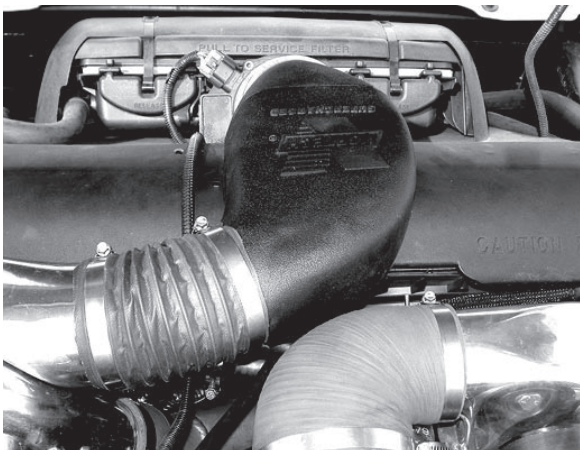


*Fig. 16-b*



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## 17. FUEL PUMP VOLTAGE BOOSTER INSTALLATION
### *(Tuner or H.O. kits only - All others Proceed to Step 18)*

**NOTE:** *Fuel pump or voltage booster components are not included in the Vortech systems. These are accessories that can be purchased separately.*

**NOTE:** *The purpose of the voltage booster is to raise the voltage to the factory fuel pump when the vehicle is in boost. This will raise the fuel flow in order to maintain fuel pressure on high horsepower applications. Use the instructions supplied with the voltage booster to supplement the following:*

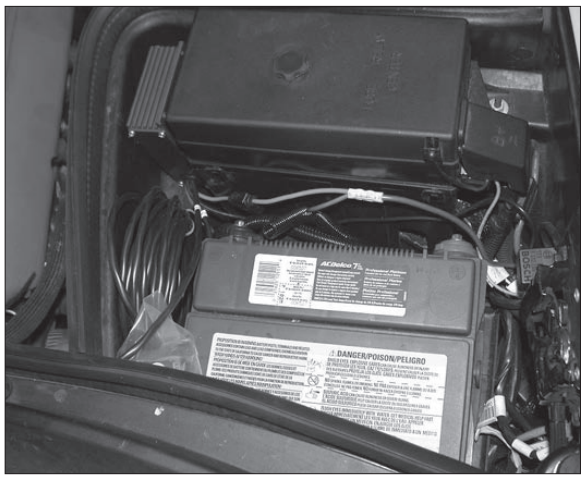


*Fig. 17-a*

**A.** The voltage booster will be installed next to the fuse/relay center. Use the supplied adhesive backed Velcro to mount it as shown. (See *Fig. 17-a*.)

**B.** Use the supplied 10 gauge wire to lengthen the power wire (orange or red with inline fuse) to terminal #87 on the water pump relay. Splice the water pump power wire into one of the connectors before crimping. (Terminal #87 should now be supplying power to the water pump and the voltage booster when the vehicle is running or for a couple of seconds after the key is turned “on”.)

**C.** Ground the booster in the same location used for the water pump ground.

**D.** Run the supplied red wire from the voltage booster power supply wire (red-no fuse) down the passenger side frame rail to the main fuel tank. Use the supplied tie-wraps to secure the wires away from heat and moving parts.

**E.** Cut the fuel pump power lead (larger gray wire on the right side of the fuel pump plug as viewed from the end with the plastic tab on top). Connect the voltage booster power lead to the pump side of the factory fuel pump power lead.

**F.** Run the red and black shielded wires over near the brake master cylinder and connect to the supplied pressure switch.

**G.** Using the supplied hose and TEE, connect the pressure sensor on the voltage booster to the bypass valve line installed in section 15-d.

**H.** Turn the controller knob to “max” and secure out of the way.


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## 18. REFLASH COMPUTER

***For 1999-2003 Chevrolet Corvettes -***

***( Those with 1997-1998 models — skip to "MICRO TUNER 2001 VEHICLE PROGRAMMING INSTRUCTIONS". )***

**A.** GM requires that a tool be installed into a wiring connector beneath the passenger's side floor floor kick panel during ANY PROGRAMMING PROCESS *(this includes performance programming and programming back to stock)*.

**B.** Once visible, you will notice there are two identical connectors to the immediate left. The Superchips 2241, Star Adapter, will fit either connector assembly., but it is only designed for use on the lower connector. If the 2241 is placed in the upper connector the Micro Tuner will fail to recognize the PCM and a "Comm Error" will occur. If this happens simply remove the Superchips 2241 from the upper connector and place it on the lower connector. This will correct the problem then simply restart the Micro Tuner programming process.

**1.** Unhook, roll up, and remove the passenger floor mat, if equipped. (See Fig. 18-a.)

**2.** Locate the passenger floor panel, which is on an incline. (See *Fig. 18-b*.)

**3.** Depress and turn two lock assemblies, freeing the panel for removal. (See *Fig. 18-b*.)

**4.** Located to the extreme left of the cavity are two gray connectors (See *Figs. 18-c, 18-a*.)

**a.** These connectors are mounted one above the other. (See *Fig. 18-a*.)

- Remove the male 'cap' from both assys.
- Lift the small tabs on the sides (See *Fig. 18-d*.)
- Both male caps are *identical & interchangeable.*

**b.** Insert the Superchips 2241 into the **LOWER** connector.

*Fig. 18-a*

*Fig. 18-b*

*Fig. 18-c*



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## 18. REFLASH COMPUTER, cont'd.

**i.** The 2241 is keyed, like the two caps you removed.

**ii.** Make sure the 2241 is inserted straight & aligned with the key.

**c.** Leave the top connector open (i.e. with the make cap removed)

**5.** Follow the normal procedure for programming (*see "Microtuner 2001 Vehicle Programming Instructions" on the following page*).

**6.** When complete, remove the Micro Tuner and shut the ignition off.

**7.** Remove the Superchips 2241 Star Adapter and re-install the two factory male connectors (See *Fig. 18-e.*)

**8.** Make sure they lightly snap into position.

**9.** Place the kick panel down.

**10.** Lock the kick panel down.

**11.** Replace the floor mat, if equipped.

**12..** Start the vehicle, like normal.

*Fig. 18-d*

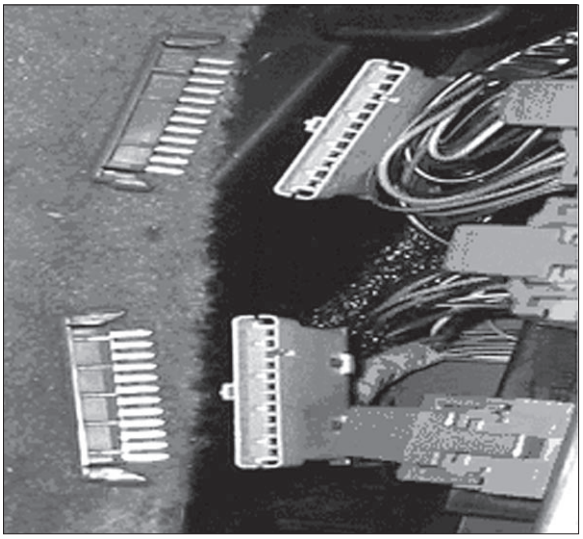

*Fig. 18-e*


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## 18. REFLASH COMPUTER, cont'd.

***IMPORTANT!*** *To ensure trouble-free programming of your vehicle's computer:*

- *Make sure the vehicle's battery is sufficiently charged.*
- *Turn off all accessories and close doors to prevent unnecessary drain on the battery.*
- *Do not attempt to program your vehicle while a battery charger is connected.*
- *Improper battery voltage will result in failure of the programming process.*
- *Do not disconnect the cable or turn off the ignition during programming.*

**C.** Reconnect the battery.

**D.** Connect the supplied cable to the 9-pin connector at the top of the hand-held unit. If present, use the thumbscrews to secure the cable to the connector.

**E.** Connect the other end to your ALDL connector located under the dash near the steering column. Make sure this connection is seated all the way in and that it is secure. You do not want this cable coming out of the connector during programming.

**F.** Turn the ignition key to the "on" or "run" position but do not start the vehicle.

**G.** To begin programming your vehicle, you may either press the YES button or the A button. If you press the YES button on the hand-held unit, this will download the Superchips performance program already stored in the hand-held unit. If you press "A", you can alter some predefined options to suit your needs. These options are not permanently stored in the hand-held unit. When power is removed from the unit, the changes you made will be lost.

**H.** You only need to press the YES button once to start the programming cycle. The programming process takes 1 minute and 15 seconds to complete.

DO NOT DISTURB THE CABLE, OR TURN THE IGNITION OFF DURING THIS TIME! IF THE PROGRAMMING IS DISRUPTED YOUR COMPUTER WILL NOT START OR RUN YOUR VEHICLE!

**I.** The hand-held unit will inform you that the programming process has completed and to turn the ignition off and disconnect the cable. Only at this time should the ignition be turned off and the cable removed.

**J.** Programming is now completed. Start the vehicle to ensure proper operation.



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## 19. FINAL ASSEMBLY AND CHECK

**A.** If your vehicle has gone over 20,000 miles since its last spark plug change, it is a good idea to change the spark plugs now, before test-driving.

**B.** Make sure that oil drain to oil pan fitting is tight and that the engine is filled with factory specified oil.

**C.** Make sure radiator and overflow tank are filled with 50/50 coolant/water mix.

**D.** Make sure that the vehicle is filled with 91 octane or higher fuel before commencing test drive.

**E.** Follow the brake bleeding procedure in the factory shop manual using Dot 3 brake fluid.

**F.** Re-install the wheels and torque the lug nuts to factory specs.

**G.** With key on, make sure charge air cooler water pump is operating and that water is flowing through the surge tank. Fill as necessary. If water is not flowing, remove the hose from the bottom of the surge tank and lower until water flows out of hose. This should prime the pump. Reconnect hose, verify water flow and top off surge tank. Do not run the water pump for extended periods (30 seconds or more) without water flow.

**H.** Check all fitting, nuts, bolt and clamps for tightness.

**I.** At this point it is OK to start the vehicle.

> ***WARNING:*** *Do not attempt to operate the vehicle until ALL components are installed and ALL operations are completed including final check. Failure to do so may cause PREMATURE FAILURE OF MAJOR COMPONENTS.*

**J.** With engine running, check power steering hose connections for leakage. Let the engine run for two minutes. Turn steering wheel in both directions.

**Verify**:

- Smooth power assist
- Noiseless operation
- Proper fluid level
- No system leaks
- No bubbles, foam or discoloration in fluid

**K.** Turn off vehicle and recheck all fluid levels, verify that no hoses, wires, etc. are near exhaust headers or moving parts and that there is no fluid leakage.

**L.** Verify that the belt, where it passes over the spring tensioner idler, has a gap between the edge of the belt and the flange on the plastic idler. If the belt is touching the flange on the spring tensioner idler, it is a result of spring tensioner wear. Either the spring tensioner must be replaced with a new one, or the following steps must be taken:

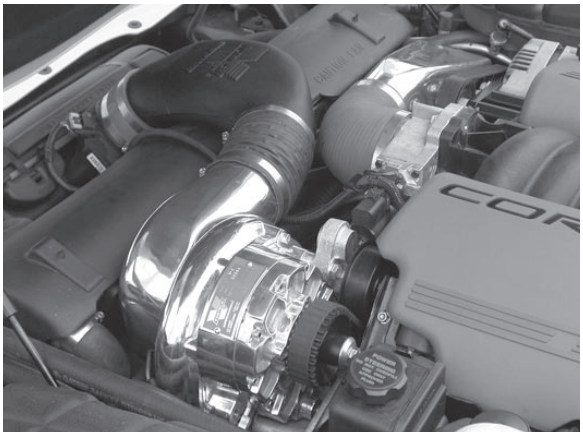

*Fig. 19-a*

- The top of the spring tensioner will be moved towards the back of the vehicle by shortening its spacer. Loosen the sleeves on the charge cooler core and move forward as far as possible for bolt head access. Remove the accessory drive belt from the alternator.
- Remove the spring tensioner idler and loosen all of the bolts securing the spring tensioner and alternator support plate except the upper alternator mounting bolt.
- Rotate the pieces up and remove the spacer from behind the upper spring tensioner mount. On a lathe, remove .040" from the length of the spacer.
- Place a 10mm washer between the spring tensioner and the alternator support plate/bushing and reassemble.
- Verify that the belt is tracking properly with the vehicle running.

> **NOTE:** *Make it a habit to check the belt at each oil change and correct an improperly tracking belt before it is damaged.*

**M.** Install a fuel pressure gauge on the vehicle and verify that the fuel pressure stays above 50 psi (especially at redline). If the fuel pressure drops below this level a voltage booster must be connected to the fuel pump and adjusted until the fuel pressure reads at least 55 psi under full throttle near redline


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## 19. FINAL ASSEMBLY AND CHECK, cont'd.

**N.** Test drive vehicle by gradually working up to full throttle and paying close attention to any abnormal sounds or engine detonation.

**O.** Install both of the engine covers by trimming the passenger side to clear the alternator and the driver side to clear the idler if necessary.

**P.** Read the STREET SUPERCHARGER SYSTEM OWNER'S MANUALAND RETURN THE WARRANTY REGISTRATION FORM within thirty (30) days of purchasing your supercharger system to qualify for the 3 year limited warranty.

***WARNING:*** *Never operate your engine at full throttle when the engine is cold. Always allow plenty of time for the oil to reach full operating temperature before running above 2,500 RPM. Full supercharger operating temperature is generally achieved only after the engine water temperature has been at the normal indicated operating range for two or three minutes.*



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